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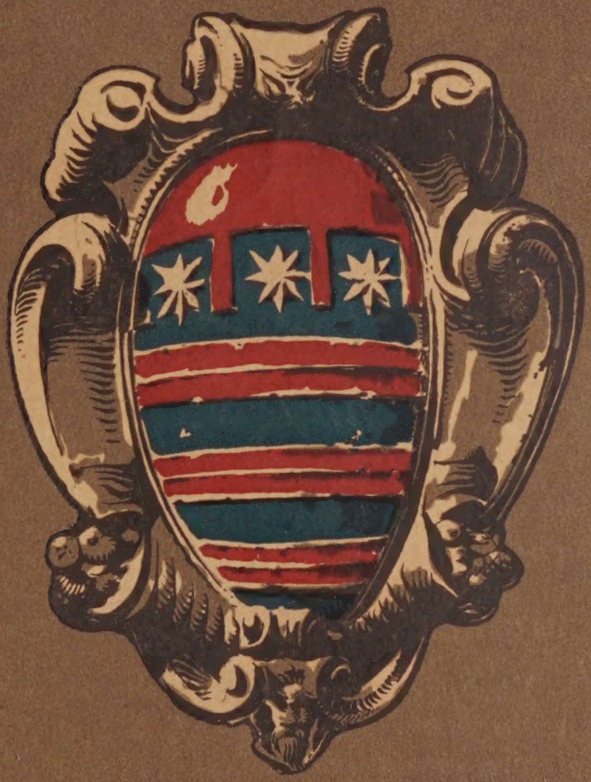
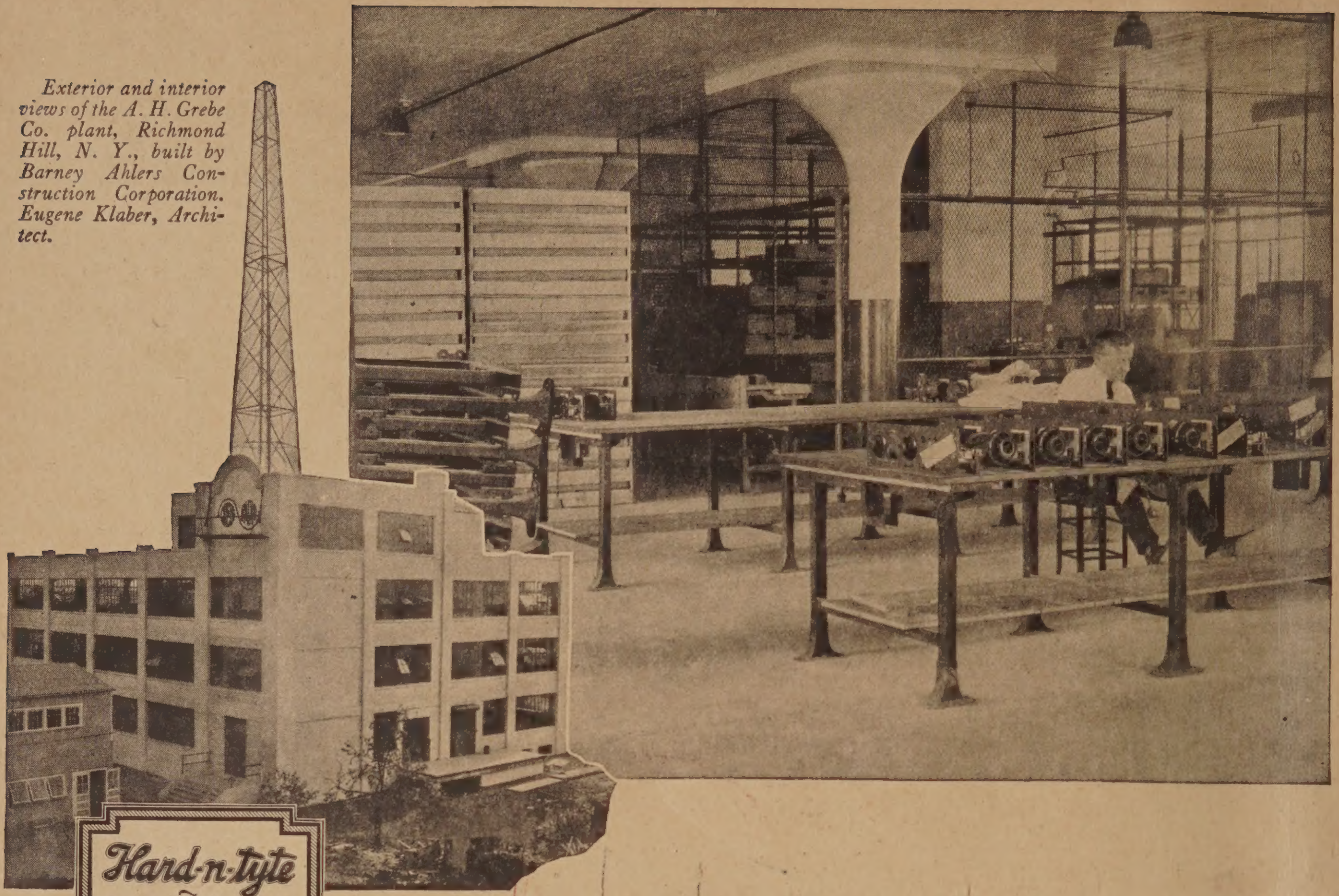


JANUARY
1923

Exterior and interior views of the A. H. Grebe Co. plant, Richmond Hill, N. Y., built by Barney Ahlers Construction Corporation. Eugene Klaber, Architect.



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THE ARCHITECTURAL FORUM

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Welfare of the Rising Generation

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BOOK DEPARTMENT

DOMESTIC ARCHITECTURE OF THE AMERICAN COLONIES AND OF THE EARLY REPUBLIC. By Fiske Kimball. 314 pp., 8½ x 11 ins. Fully illustrated, and bound in cloth. Price $12. Charles Scribner's Sons, New York.

THE interest and enthusiasm with which the public at large regards architecture, and more particularly architecture of the types which are identified with American history, are of comparatively recent growth. It seems to be but a brief time since interest in architecture upon the part of the public was so completely non-existent that apart from consideration of what made for actual utility little concern was felt as to the form which a building might assume. Proof of this complete lack of interest may be found in any American city in public buildings, business structures and residences which are now regarded as monstrosities, and yet which cost goodly sums, far more than would have been required to erect buildings which might have been masterpieces of their kinds had there only been sufficient interest in the first place in designing intelligently what was built well.

This interest which is now, happily, widespread has been the outgrowth of several movements, apparently unrelated but all traveling roads which have led to a common meeting place. First of all there have been the beginnings and growth of many societies concerned with the histories of different sections, particularly of the older states, or of individual cities and towns. Then there have grown up a great number of organizations which are partly historical and partly patriotic, such as the Sons of the Revolution and the Colonial Dames and numerous others, societies which in no wise cater to snobbishness (as some suppose) but which aid in the formation of a patriotic national sentiment which has had its due effect upon the fostering of interest in whatever concerns our country's past. Finally, there has been the great movement toward architectural betterment which began with the centennial in 1876 and which has moved (though not always in a straight path) toward the goal of a higher type of architecture and of all the arts in general, this movement being powerfully aided by certain architects whose names will live in history. The movement, now well grown but not yet fully matured, is still progressing apace, aided by many architects, and by students and writers not a few.

Harrison Gray Otis House, Mt. Vernon Street, Boston
(Charles Bulfinch, 1800)
Illustration from "Domestic Architecture of the American Colonies and of the Early Republic"

In this excellent work is published the substance of a course of lectures delivered at the Metropolitan Museum of Art by Prof. Fiske Kimball of the University of Virginia during February and March, 1920, somewhat elaborated here to present a comprehensive and accurate view of the evolution of the American house. Splendidly illustrated, it presents in picture as well as by the printed text a complete review of this important subject, dealing with the development which took place simultaneously in many parts of the country, and doing ample justice to each. Every available source seems to have been ransacked for material, and the result is a work which is valuable for its potency in moulding the future of our national development, which many signs indicate is

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entering a period in which architecture will be vastly more important than ever before.

Besides containing illustrations and descriptions of many well known buildings, necessarily included in a work of this character, there are illustrations of many structures which have hitherto remained unnoticed and of many others which have fallen before the inexorable march of progress, but which in the form of sketches or original drawings still contribute to the general welfare. The entire volume shows the careful use of data of every kind which characterizes all of Prof. Kimball's writing, and the work may be recommended with entire confidence as being a valuable addition to the literature of the important topic with which it deals.

SKETCHING AND RENDERING IN PENCIL. By Arthur L. Guptill. 186 pp., 8¾ x 11¾ ins. Price $5. The Pencil Points Press, Inc., New York.

IN his preface to this admirably written and helpful volume Howard Greenley points out the fact that although the pencil is used with all forms of pictorial delineation there has long been lacking much in the way of published works giving authoritative instruction in the technique of the pencil's use. This lack Mr. Guptill, in view of his many years in the practice of drawing and of considerable experience in the training of others, has here supplied.

Since the work is intended for the guidance of students who may have had little or much experience with the pencil, the author covers the subject from the beginning, the early chapters dealing with such topics as "The Essential Equipment," "Object Drawing in Outline," and "Object Drawing in Light and Shade," the text being so thoroughly illustrated that the student could scarcely fail to profit by its reading. Later chapters discuss such subjects as "Free-hand Perspective," "Cast Drawing," and "Life Drawing," and in this last mentioned chapter there is given much advice regarding sketching from life which Mr. Guptill has found necessary or helpful from his years of experience in the classroom. With Part II the author takes up the consideration of period drawing as applied to architectural work, giving in every paragraph suggestions which could not fail to be of help to students. Particularly in this section the illustrations, which are many, are selected with care to bring to the students' attention the exact points which the writer wishes to emphasize. Sooner or later one develops what is called a "style," and often one's style of drawing may be almost as individual as one's handwriting. As illustrations for the chapter which treats of this development the author presents sketches by quite a number of well known draftsmen to serve as models of individual style.

Many are the occasions, particularly in architectural practice, where one must supply a sketch made not from an object itself but from a photograph or some other representation thereof, and the treatment of this section is especially helpful, made plain by sketches from different points of view of a photograph which is itself reproduced.

There are volumes which are prepared with the instruction of the beginner chiefly in view, but in this work there is enough of interest and importance to advanced students to give it a high value to anyone interested in the broad subject of pencil drawing.

FURNITURE MASTERPIECES OF DUNCAN PHYFE. By Charles Over Cornelius. 86 pp. Price $4; Limited De Luxe Edition, $12. Published for the Metropolitan Museum of Art, by Doubleday, Page & Co., Garden City, N. Y.

TO the broad and increasing interest in all that enters into architecture, design and ornament is due the enthusiasm which is expressed in the study of the historic periods of architecture and of the furnishings which were made for buildings of earlier days and which gave added character and expression to them. This interest naturally extends to the work of individual craftsmen, particularly of such as were influential in forming the taste of their periods or in establishing a vogue which became an important element in the development of style.

This volume is a study of the work of one early American designer and maker of furniture, indeed the one worker in this field whose name survives in history. The type which his name brings to the mind of any student of the periods is a faithful reflection of the spirit and tendency of the early nineteenth century era in American history, and expresses eloquently its aspirations. The book, written by the assistant curator in the Department of Decorative Arts of the Metropolitan Museum of Art, is the result of wide study of the work of Duncan Phyfe and considerable research into his career, and in these pages there is contained a survey of the period during which Phyfe lived and worked, a formative period for America in many ways, since national life was assuming what was to be its permanent form politically, and popular taste regarding building was being moulded. This survey of Duncan Phyfe's times is followed by an analysis of such of his furniture as yet exists and an examination of the types of ornament which he used. The volume must be regarded as a contribution of permanent value to the student of architectural and decorative styles and periods and of taste in general, and the value of the subject matter is emphasized by the excellent form in which it is presented, for the volume is notable for its careful printing.

THE ARCHITECTURAL STUDENTS' HANDBOOK. By F. R. Yerbury, Secretary to the Architectural Association. 150 pp., 4½ x 6¾ ins. Technical Journals, Ltd., 27 Tothill st., Westminster, S. W.

FOR the benefit of young men and women in England who aspire to the practice of architecture this work has been prepared. Unlike many of the volumes which have lately appeared, in England as well as in America, this volume is not concerned primarily with the technicalities of architecture, such as drawing, the use of different mediums and the like, but rather with what might be termed its business aspect—methods of study, competitions, and the early days of actual practice.

The arrangement of studies in England differs materially from similar arrangements in the United States, but there is enough in common to give the book a value for students in this country. The requirements for entrance to the great French architectural schools are the same for students from either country, and since a considerable portion of the work deals with the importance of study and travel in France, Italy, and elsewhere in continental Europe, the volume is well worthy of the attention of students anywhere. Mr. Yerbury writes as one having authority, in view of his term of service as secretary to the Architectural Association.

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The authors have for some time been preparing and using in their practice various tables and diagrams in order to finally complete data of the greatest value to the majority of designing engineers and to present this data in the most convenient form. No attempt is made to develop theory. The text is limited to explanations of the tables and diagrams, and where necessary specific examples of how to use the diagrams are given. The book cannot fail to be a great time-saver for designing engineers. It contains material never before published.

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PUBLICITY METHODS FOR ENGINEERS. The American Association of Engineers, 63 East Adams street, Chicago. 186 pp., 5 x 7½ ins. Price $1.50.

IN this volume there are presented in published form the papers read at the First National Conference on Public Information to be held under the auspices of the American Association of Engineers, edited and amended for more easy reading. While publicity has become one of the most potent of modern forces and while its importance is being constantly more widely recognized, there have always existed certain obstacles to the employment of this powerful agency by members of the various professions, among them doctors, lawyers, architects and engineers, upon the ground that advertising or the use of any direct form of publicity is undignified and not consistent with the ethics which govern or regulate the professions. This has of course militated against the use of this most powerful aid in forming public opinion on the part of men who would be helpful in serving the public and instrumental in aiding in the solution of many of the problems which affect the public welfare. A merchant is never slow in informing the public of the advantages of dealing with him; a building contractor often has unrivaled opportunities for advertising the value of his service, but the architect or engineer, whose plans are merely executed by the contractor and whose skill and thought have made the contractor's visible achievement possible, is expected to be silent.

And yet there remain countless methods by which publicity may be secured by architects and engineers without the violation of any established ethical standard, and some of these methods are discussed in this volume. It has been found that newspaper and magazine editors are generally more than willing to give publicity to what possesses a news value, and their attitude presents many opportunities for the profession, the activities of which may often be presented in the form of news. The papers read before the conference and presented now in the form of chapters have to do with: "Some Problems Before the Engineer"; "A National Program of Public Information"; "The Meaning and Purpose of Publicity"; "Making Publicity Out of Policies"; "The Public Debt to the Engineer"; "Making Easy Reading of Engineering Subjects"; "Local Publicity Methods," and other helpful chapters.

NORTHERN ITALIAN DETAILS. Drawings and photographs by Walter G. Thomas and John T. Fallon, with an Introduction by John Mead Howells. 143 plates. 9 x 12 ins. Price $7.50. U. P. C. Book Co., Inc., New York.

IN his work as a designer the architect feels the need of accurate details of ornament in such form that working drawings of suitable scale may be prepared. Many works upon ornament and other phases of architecture contain admirable reproductions of sketches or photographs, but they are not always of a character which lends itself to the requirements when it is necessary to adapt a balustrade, door or window architrave, a cartouche or some other detail.

To meet a widespread demand, therefore, this edition of a well known work has been produced. The method used is direct and practical—that of giving reproductions of the photograph and of the measured drawing of the same detail side by side. The photograph gives the sentiment and impression of the original detail, while the drawing gives the means of reproducing it.

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THESE portfolios present in the form of plates a selection of the best examples of Spanish domestic interior architecture and furnishing of the period from the sixteenth to the eighteenth century. The illustrations do full justice to the Spanish faculty of securing quiet architectural richness and unusual effects by the use of simple materials skillfully used, the decorative value of plastered walls when contrasted with simple, well planned woodwork in which much use is made of structural timbers, and the effect upon the interior of deeply splayed windows and doors used in Spanish interiors.

FOR the architect or decorator there is here given a wealth of ideas as to the possibilities of the Spanish style, which are as yet comparatively unknown. The furniture, pottery, tiles, ironwork and fabrics which go to making the Spanish interior so unusual are not difficult to secure, and their judicious combination might easily result in an effect out of all proportion to the cost involved. It is almost wholly a matter of tasteful and characteristic arrangement, and much of the skill which is necessary for arranging these effects is to be acquired from these illustrations of actual Spanish homes.

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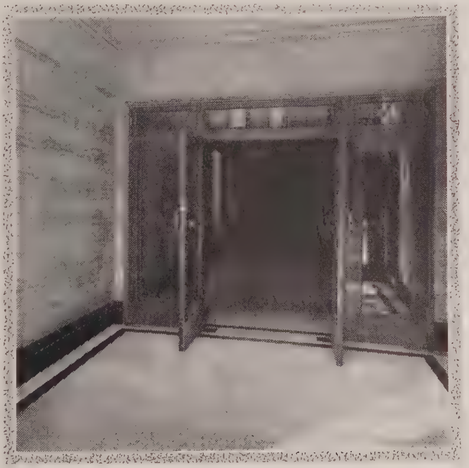

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THE ARCHITECTURAL FORUM

VOLUME XXXVIII NUMBER 1

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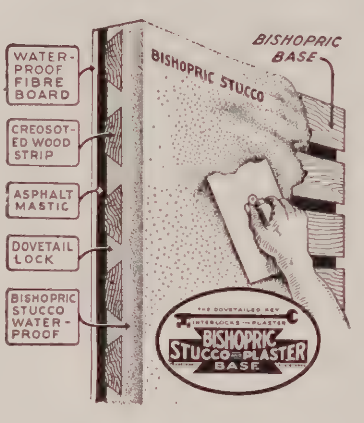

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ECONOMIES IN SCHOOL BUILDINGS

A CORRESPONDENT calls our attention to the probability that in the article entitled "Economies in Cleveland School Plans" which appeared in the School Building Number of The Forum (August, 1922) the reader would infer that certain economies in regard to school building plans originated in Cleveland, though it is a matter of record that certain of these economies were known to architects many years ago and in cities other than Cleveland. For example, there is the matter of waste space in corridors, stairs and unnecessary rooms mentioned as having been found in Cleveland to be productive of much waste of building which we are told was realized from studies made in Boston several years ago and published in a report of the Boston Schoolhouse Commission which covered the period 1901-3.

A careful reading of the article in question, as well as of the editorial comment upon page 114 which refers to it, would, we think, prove that what is described in these pages is merely the successful application of this and certain other forms of economy, the existence of which was known before. The discovery of methods by which economy can be effected in building of any kind is a matter of particular importance today, and it is a matter of congratulation that architects gladly offer their discoveries for the benefit of the entire profession.

ANOTHER ARCHITECTURAL JOURNAL

IT is always a pleasure to welcome a new publication intended to aid in serving the architectural field, and the pleasure is all the greater when the new journal gives every promise of maintaining a standard which is high and a point of view both critical and scholarly. A welcome, then, to *Architecture*, an English publication issued by The Society of Architects, with the November number of which the society's journal enters upon a new stage of its career and appears under a new name and in a new dress. The moment seems to be propitious for the strengthening of publications in the interests of architecture, for upon all sides there are indications that the profession everywhere is to enter as perhaps never before into the lives of the people, and that it will be called upon to aid in the solution of countless problems upon the correct solving of which much depends.

One of the functions of an architectural publication is logically to aid in the formation of a trained taste among architects, furthered by study of the architecture of the past as well as by presentation, for praise or criticism, of work being done today. This is what *Architecture* sets forth to do, and in the numbers for November and December we find these subjects treated by eminent writers upon their respective topics. The journal of an architectural society would logically concern itself also with the education of students and of younger architects, and would naturally record the progress of the society of which it forms the official organ, while interesting features are reviews of architectural books and comments upon other current architectural periodicals and letters upon the architecture of other countries. *Architecture's* address is 28 Bedford square, W. C. 1, London, and its subscription is 12*s* per annum.

INDIANAPOLIS ADOPTS ZONING

THE results already achieved by zoning in different cities where it has been put into effect are promoting the planning of zoning ordinances elsewhere. Indianapolis adopted a zoning ordinance November 20 by unanimous vote of the council approved by the Mayor, the first such ordinance to be adopted by any city in Indiana under the authority of the State Enabling Act formulated in 1921.

The use districts established are: (1) dwelling house; (2) apartment house; (3) business; (4) first industrial and (5) second industrial. The area requirements are designed to spread out the population, prevent congestion, and promote a detached house development. 7,500 square feet of lot area per family is required in a limited section; 4,800 square feet per family in the less developed areas around the borders of the city, and 2,400 square feet or two families to the ordinary 40 by 120 foot lot throughout the rest of the dwelling house area. In much of the area in which apartment houses are permitted 1,200 square feet per family is required; in limited portions of the apartment house districts only 600 square feet per family is required, and in very limited areas, suitable for hotels and apartments with elevators, there is no limit as to the number of families that may be housed on a given area. Front, rear and side yards are required in all residence districts.

In the height district allowing maximum height, the limit is 180 feet, excepting that for a street 100 feet or more in width, the limit is 200 feet. As practically all of the streets in this district are 90 feet in width, the limit is really based on two times the street width. Washington street with a width of 120 feet is the only street where the 200-foot height will be allowed at the street line. Greater height will be permitted with a setback in the ratio 1 to 3, but this setback must be from all lot lines as well as from street lines. The City Plan Commission first recommended a height limit of 150 feet, but later agreed to the 180-foot limit as a compromise with the down town owners who asked for the retention of the existing limit of 200 feet.

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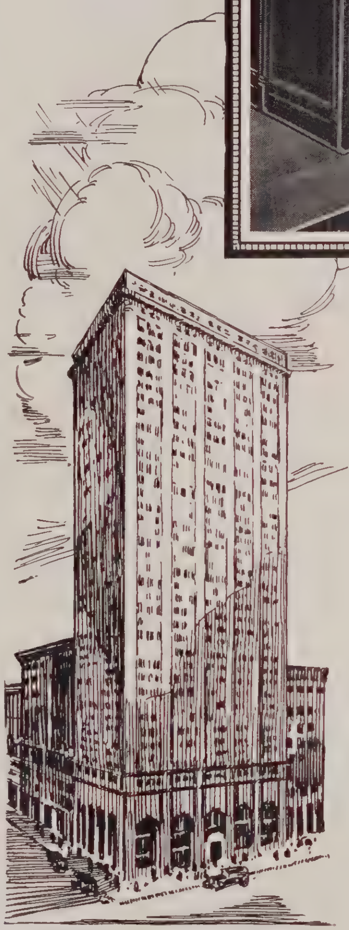

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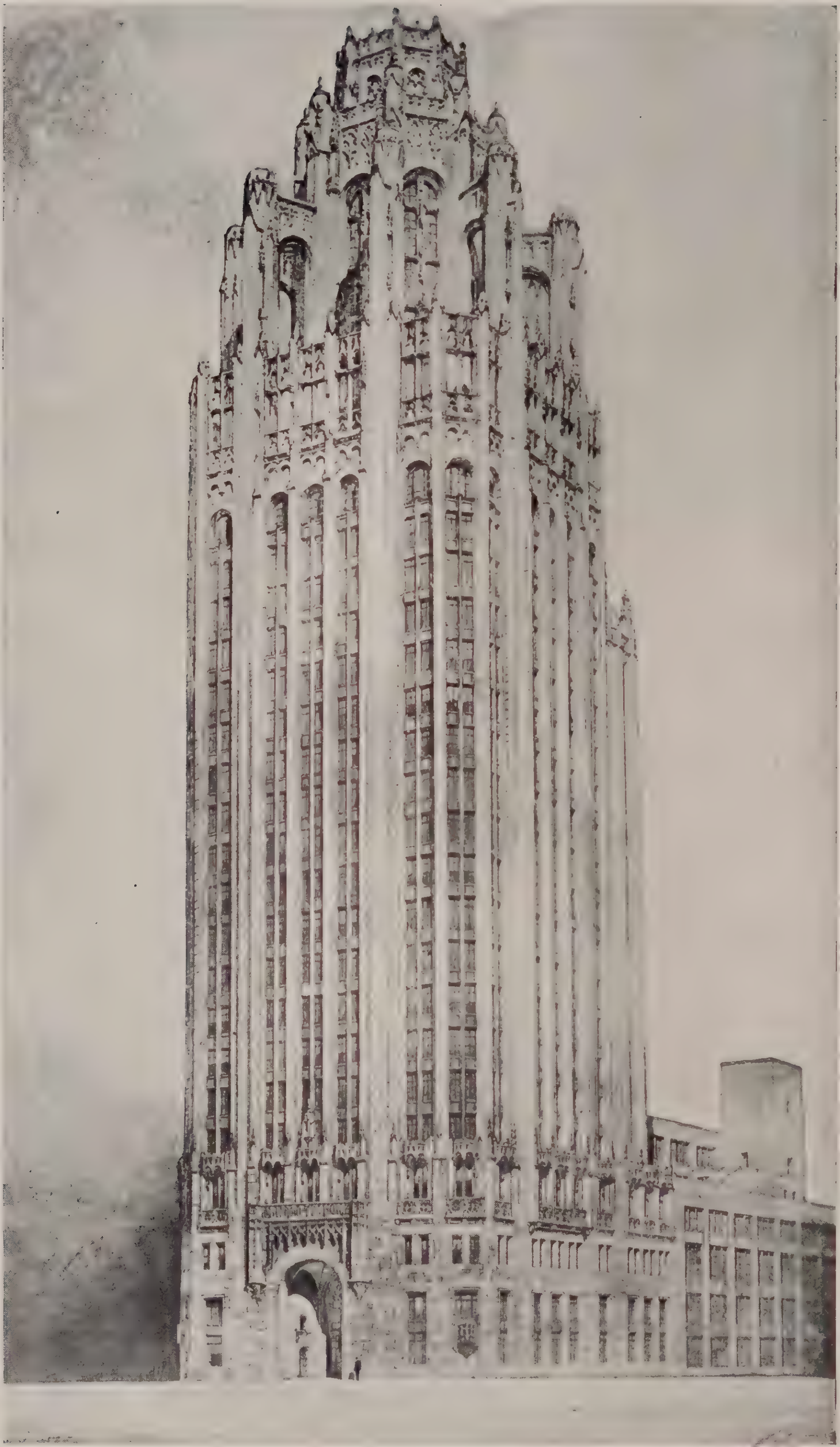

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The
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VOLUME XXXVIII JANUARY, 1923 NUMBER 1

Mexican Renaissance

PART II

By WALTER H. KILHAM

MANY examples of later doorways show a remarkable development of the use of the horizontal shadow, which almost recalls the similar practice in some of the temples of India and lends color to the theory of some archæologists that in the mysterious past of Mexico a connection existed with the orient. The great portal of the Colegio San Ildefonso in Mexico City is an impressive example of this sort of thing, though quite purely Spanish in the general swagger of the scheme.

A good example of original handling of the style by an individualistic designer is the great Colegio de las Vizcainas in Mexico City whose massive facade, nearly 500 feet long, of red *tezontle* is relieved by three great doorways and two rows of gigantic windows, those of the upper story octagonal and attached to the lower row by curious connections of gray stone. All the windows have the deeply splayed jambs which are an important feature of much of the old work. This building, which stands in what is now an unsavory quarter, has figured in much of the history and literature of the Mexican capital, and is still of great architectural importance, even though its tremendously heavy walls have sunk so far into the yielding soil that the base of the facade is no longer visible.

The wonderful carved, gilded wood altars and *retablos*, of which large numbers remain in spite of changing fashions, are an important feature of almost all the church interiors. The wood of which they are made is usually covered with a thin coat of plaster on which is laid the gilding, heavy leaf or almost thin gold plate, turned by time to the rich color of old gold. Carved in the most bewildering manner of the Churrigueresque and intensified by the barbaric imagination of the Indian workmen, these great altars, which in some cases almost fill the ends of the churches, produce a feeling of mysticism, almost of awe, even in the most cynical of northern visitors. The niches are filled with little polychromed statues whose paint has the patina of old ivory, and the medallions often contain small painted gems of biblical subjects of so great a charm as to inspire wonder as to their origin. In many cases they may have been painted with reverence and zeal by forgotten artists, but it was also the habit, during the craze for Churrigueresque, to cut up old paintings and select figure groups to insert in the panels over the altars. The high altar of the delightful little Church of La Enseñanza in the national capital has one of the best, though not the most typical, of these *retablos*. The medallion-like paintings are of surprising merit, and would excite interest if they were found in any church in Italy.

The curiously paneled wooden doors of the older buildings show Spanish and even Moorish origin in their interesting and intricate designs. They are generally innocent of painters' finish and have acquired the color and finish given by centuries of exposure to the weather. The vigorous design of the woodwork is strengthened by the great boltheads with which they are liberally sprinkled and the formidable bolting apparatus on the inside. A Mexican house of the older type is entered only through a cavernous stone-flagged tunnel, high-studded and timber-ceiled, called a *zaguan*, big enough to admit not only a coach and four of the olden time but the owner's limousine of today, which often is seen lurking in the shadows at the base of the grand stairway. When this door with its four or five inches of tough wood is closed and bolted, the house becomes a sort of fortress, and many such show the marks of fruitless attacks by furious revolutionists during the years of the late unpleasantness.

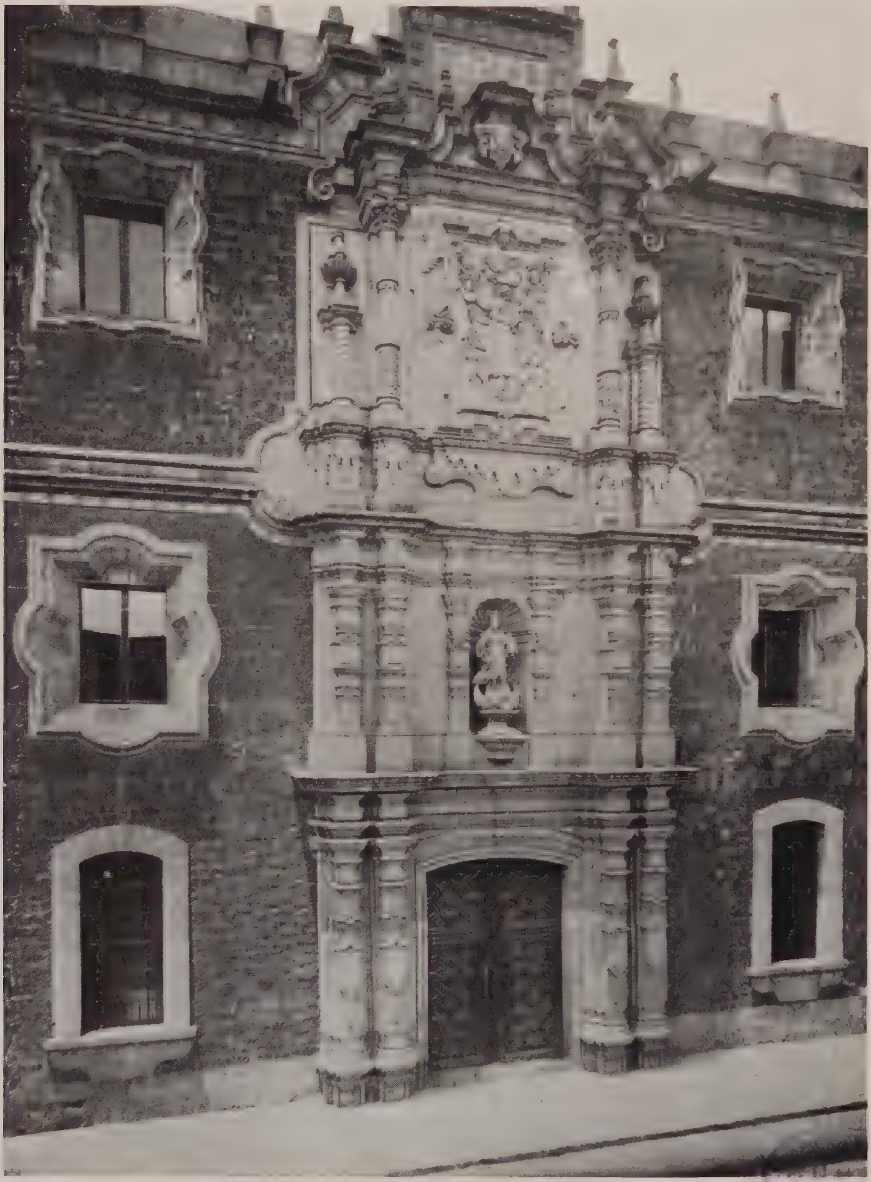
The patio which is approached through the *zaguan* takes on its most coquettish aspect in a private house. The stone stairway swings up to the balcony level in a surprisingly nonchalant manner; bright flowers in boxes or pots bloom or fall from the balustrades. Birds are in wooden cages hung from the walls; gay rugs are thrown over the balustrades, and if the establishment is really old enough the family turkey may emerge from the arcades where Tomaso or Vicente is washing the car, and gobble in impotent defiance. They are delightful places to live in, these old Mexican houses, and our American homes are not to be compared with them in interest.

Much of the skill of the masons of old Spain came to Mexico, and the work in some of the stone stairways, notably those in the National Palace at Chapultepec, is worthy to be compared with some of the best in Europe.

The beautiful stanniferous faience or tin enameled tiles, the use of which forms one of the most distinctive features of Mexican architecture, was manufactured principally in the city of Puebla where the industry was established during the seventeenth century, probably by potters from Spain, some of whom, coming from Talavera in that country, caused the name of Talavera ware to be given to the productions of the Puebla potters. Allusion has already been made to the use of these enameled tiles for coverings of domes,* towers and walls as well as all sorts of interior purposes. The production must have been large, for a great many old churches and buildings possess wainscotings, lavabos and tablets in faience. As a proof that bathing was at least occasionally practiced in colonial Mexico, there is still to be seen in a rather plain old house in Mexico City a perfectly preserved tiled bathroom with a tiled tub, in the bottom of which is depicted with great fidelity and lifelike coloring a full-length effigy of a lady of considerable personal charm. Nearby in the garden of the government tobacco factory, once the famous Palacio de Buena Vista, the successive abode of two ill-fated generals, Santa Anna and the French Marshal Bazaine, there are some good examples of the decorative use of tiles in garden seats.

Church of N. S. Loreto, Mexico City. By Tolsa

The Casa de los Azulejos, in the Avenida Francisco I. Madero, in Mexico City, is so well known as to need no extended description here, but it must take rank among the most beautiful buildings of the world. The walls are covered with blue, white and yellow tiles in charming patterns, relieved by original and interesting detail in gray stone. This building which was for a long time the home of the Jockey Club was, after being put to a popular use by President Carranza, bought by an American, who utilizes the patio as a restaurant and the front portion as a pharmacy. The slender stone columns of the patio, with their semi-Aztec fluting, and the great baroque fountain are delightfully idiomatic in style and well represent another individual handling of the Mexican work. On the


East Entrance, Colegio de San Ildefonso, Mexico City

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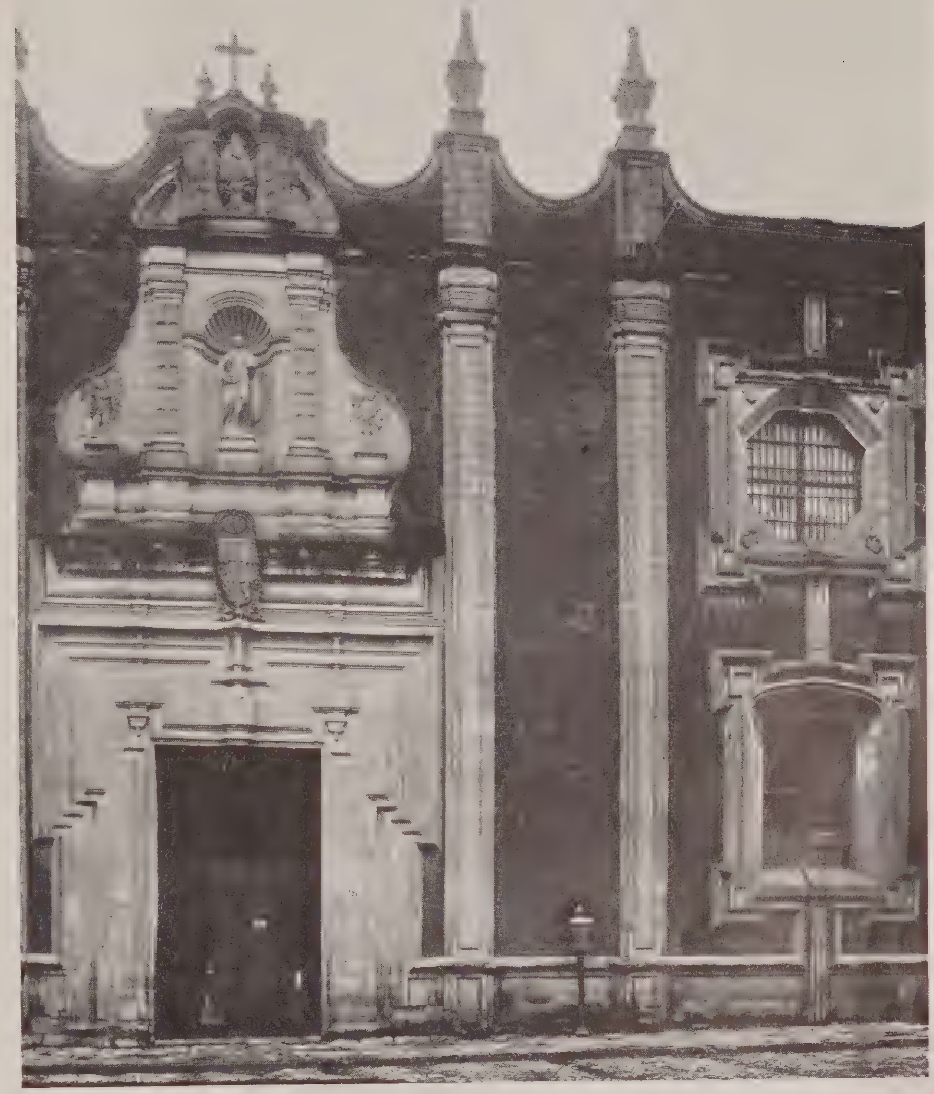
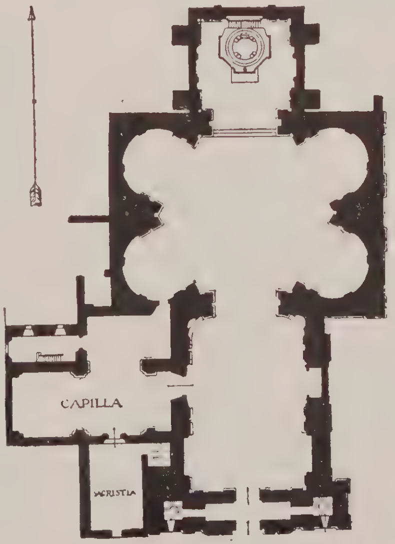
*Some of the best were illustrated in *The Brickbuilder*, 1911-12.

stairway of this building is a remarkable tiled wainscot, thought by some to be of Chinese origin, but which good authorities emphatically pronounce eighteenth century Pueblan.


Entrance, Colegio de la Vizcainas, Mexico City

The designers of most of these splendid productions have shared the common fate of the architectural fraternity, and their names are lost in oblivion. If instead of producing useful and beautiful buildings they had murdered peaceful natives by the hundred, or engaged in wholesale destruction of priceless books and records, every schoolboy in America would be forced to memorize their names; as it is, very little is known of the early colonial builders. The original design of the great Cathedral of Mexico was by Alonso Perez de Castañeda, royal master of architecture about 1572, but his plan was modified in Madrid by one Juan Gomez de Mora, architect to Philip III, whose plan was sent over under royal seal with orders to use it. These two are remembered with half a dozen others of lesser fame, and it is said that the Cathedral of Puebla is by the same Herrara who designed the Escorial in Spain, though Señor Revilla, who ought to know, attributes it also to De Mora. There is an interesting legend about one Alferino Gutierrez, a poor Indian, self-trained and having no technical knowledge as a draftsman, who imparted his ideas to his workmen by marking off his working drawings with a stick in the sand. This man produced some remarkable work in his native town of San Miguel de Allende. The churches of La Santisima Trinidad and the Sagrario Metropolitano, illustrated in Part I of this series, were designed by Lorenzo Rodriguez, a devoted student of the style of Churriguera.



Plan, Church of N. S. Loreto, Mexico City. By Tolsa

As the eighteenth century drew to a close, however, two important architectural names appeared and seem to be secure in a fame all their own. Francisco Eduardo Tres Guerras and D. Manuel Tolsa were true artists of the renaissance, records of whose romantic careers would fittingly adorn the pages of another Vasari, and like the Italian architects of the *cinquecento*, each excelled in arts other than architecture. Tolsa indeed was perhaps even greater as a sculptor, while Tres Guerras was also not only successful as a painter and engraver, but is remembered for his sonnets as well. The latter was born in Celaya in 1745 and spent most of his life in his native city, refuting the proverb about a prophet's being without honor in his own country, for it was his home town which gave him the opportunity to produce his greatest work, the beautiful Iglesia del Carmen at Celaya. This church was dedicated in 1807 and cost $225,000. According to Terreros, who has written an interesting sketch of his life, he was compensated from 1802 to 1807 by an honorarium of 2,000 *pesos* annually, which according to the tradition in Celaya he took in real estate consisting of some small houses which existed until recently, enjoying the name of "Banos de Tres Guerras." Tres Guerras has left his own description of his masterpiece, wherein it is worthy of note that he says the dome is of the same height as the tower, 70 *varas* (195 feet), and is elliptical in plan with eight windows in the drum, which he points out give 90 square *varas* of light for the interior. The interior decorations, including a dramatic Last Judgment and a Resurrection of Lazarus are by his own hand. His other most important works were the Convent of the Teresitas at Querétaro, the Teatro Alarcon at San Luis Potosi, the Casa Rul at Guanajuato, and the bridge over the River Laja between Querétaro and Celaya.

Wooden Door, Cathedral of Mexico City

Although most of Tres Guerras' long life was spent in the small city of Celaya, it was not entirely without incident. Besides at times holding the office of sindico, registor and alcalde, he was always a patriot and was involved in the insurrection of Hidalgo against the Spaniards in 1810, but escaped punishment when it was suppressed, and it is told that when Mexican independence was finally consummated he raised the commemorative column in the plaza of Celaya, wrote a patriotic ode and "rejoiced in such a manner that some qualified his demonstrations of joy as those of a crazy man." He lived to the ripe age of 88, and the picture of his declining years as related by Terreros must excite a feeling of envy among the architects of this hurried age. It seems that he was fond of playing the flute, and during the last years of his life he might be seen going on foot every afternoon towards a little hacienda which he owned in the vicinity of the town. With his long cloak over his shoulders he would march along playing his flute and followed by his faithful and inseparable dog. Then seating himself in the shade of a tree he would, with all the simplicity of a little child, alternate between playing with the dog and calling forth the harmonious notes of his favorite instrument. From this improvised Arcadia he could gaze upon the lovely and peaceful landscape and contemplate with the highest satisfaction the distant outlines of the greatest works of his active life. Not until the late afternoon, when the herds came slowly down to drink from the waters of the Rio Laja, and the last rays of the dying sun illuminated the graceful dome of Carmen, would he turn away and retrace his steps to his home in the city.

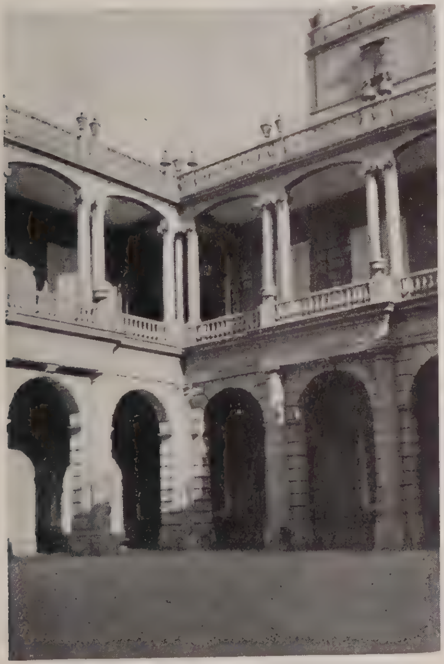
Although his paintings are considered to be of less importance than his buildings, he believed himself to be much greater as a painter than as an architect, which leads Terreros to remark that artists are seldom good judges of their own work. Like most men of genius he had his troubles with envious rivals, and he owned to a certain acid wit to which he occasionally gave vent. When he built his column of victory in the square of Celaya it is said that he made the

High Altar, Church of La Enseñanza, Mexico City

Tiled Seat in Garden of Government Tobacco Factory, Mexico City

eagle which surmounted it with its head looking backward, away from the city hall, so, as he explained to a friend, that it "might not see the barbarities committed by the municipal authorities."

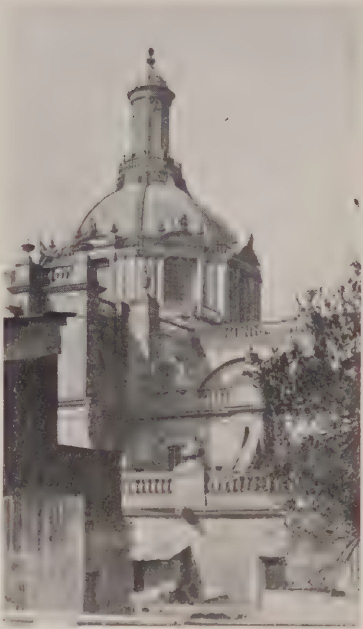
Quite different was the career of Tolsa. Born in Spain in 1757, he had already acquired sufficient fame as a sculptor to be invited to go to Mexico in 1791, in company with the painter Ximeno, to take charge of the classes in sculpture at the new Academy of San Carlos, the royal school of art in New Spain, which was probably the only institution of the sort in the new world, at least the first in North America. As a sculptor, his greatest work is the noble equestrian statue of Carlos IV, a classical treatment, which, though not generally well known, should by virtue of its natural movement, graceful lines and majesty of form, take rank among the great equestrian statues of the world. Tolsa's reputation as a sculptor was already secure when he decided to take up architecture, but his works in this latter field are of equal importance. He is best known in connection with the vast pile of the Mineria, or school of mines, a somewhat gloomy affair of blackened volcanic stone whose long facades, never entirely completed, enclose a patio and grand stairway of great majesty. His style was the Greco-Roman, modified evidently by the severer phases of French work of the period, which had a quieting influence on the riotous local baroque. Another very interesting work of Tolsa's is the Church of N. S. de Loreto, whose dome is raised on a curious hexagonal plan very satisfactory in internal appearance, though unusual as seen on paper. Tolsa's engineering was badly at fault in both these operations, as each has sunk far beneath the pavement and the Loreto has a bad list to port; still, he may have an excuse in the case of the Mineria, as Terreros relates that he had only two months to make the plans for the enormous building, together with a detailed



Courtyard of the Mineria, Mexico City. By Tolsa

Detail of Patio, Casa de Los Azulejos, Mexico City
Architect Unknown

estimate of cost which he put at 217,617 *pesos*. He was appointed at the customary wage of 2,000 *pesos* per year, at the end of January in 1797, and work on the building was begun the latter part of March. Various interruptions intervened, and the works were not terminated until 1813, by which time the original estimate of cost had grown to a million and a half *pesos*. In spite of the serious settlement of the foundations the building is a splendid monument, and the view of the patio illustrates the correctness of the detail. The treatment of the lintel between the coupled columns of the main story has been questioned, but it may well be put down as a praiseworthy attempt to improve the lighting of that portion of the building. Tolsa further completed the facade of the Cathedral of Mexico and designed the central lantern, which he is said to have purposely kept light in design so as not to compete with the two fine towers. He designed the splendid tabernacle of the Cathedral of Puebla and certain houses of Mexico City. Compared with the elegance and graciousness of the work of Tres Guerras, his is severe and cold but of great purity. The influence of the pair was to stop, probably forever, the vogue of the baroque and Churrigueresque. Tolsa died in 1816, before the consummation of Mexican independence. Tres Guerras survived until 1833. Terreros esteems him as the best architect that Mexico ever produced, rating him higher than Tolsa on account of the greater stability of his work. Certainly up to their time the United States had produced nothing which could approach the work of these two men.


Central Lantern, Cathedral of Mexico City. Attributed to Tolsa

In the preceding article allusion was made to the strong Aztec influence visible in many of the renaissance buildings of Mexico; it can only be said in passing that this evident architectural infusion of the taste of an alien and subject race forms one of the most engaging and romantic features of an architectural visit to Mexico.

The mention of architectural detail leads us on to a brief examination of further detail. Stairways alone deserve a volume, not to mention walls and gateways, and the *nichos*, tiles—blue, white and yellow. Some day I am going to write about them.

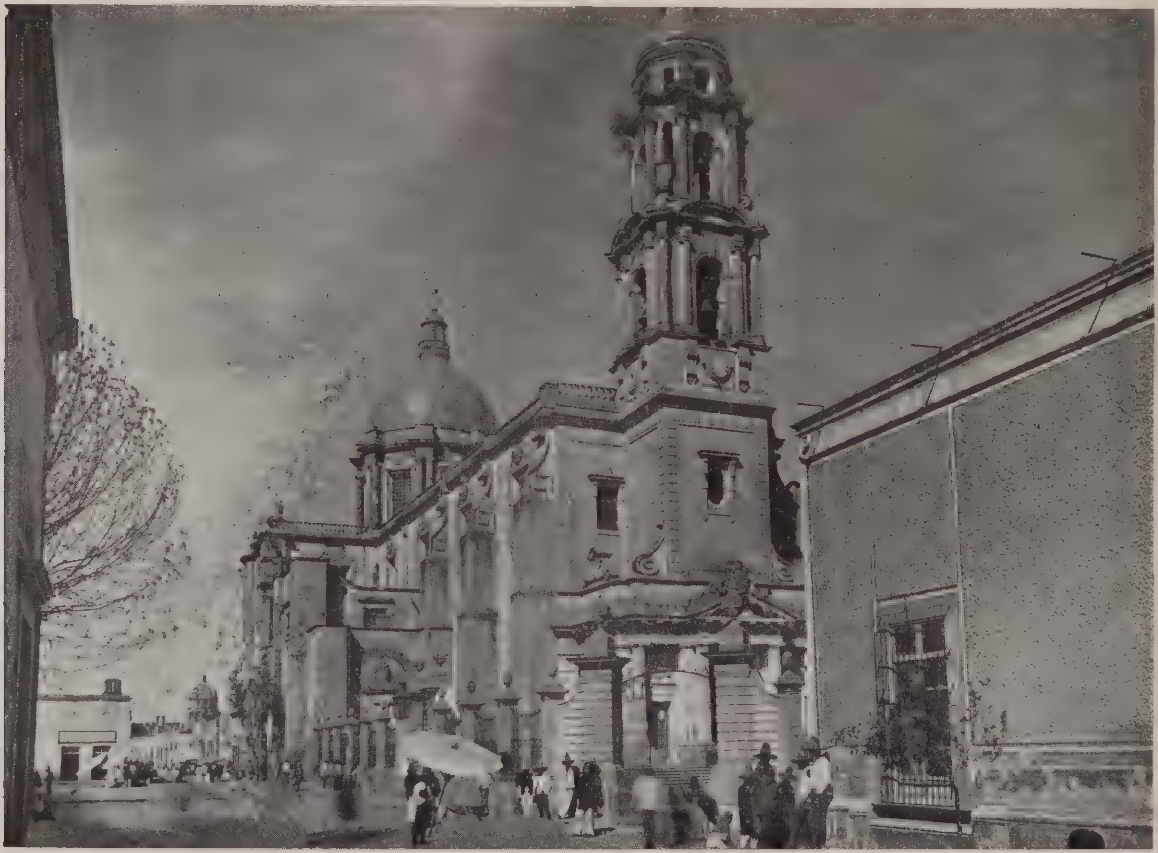


Photo © C. B. Waite

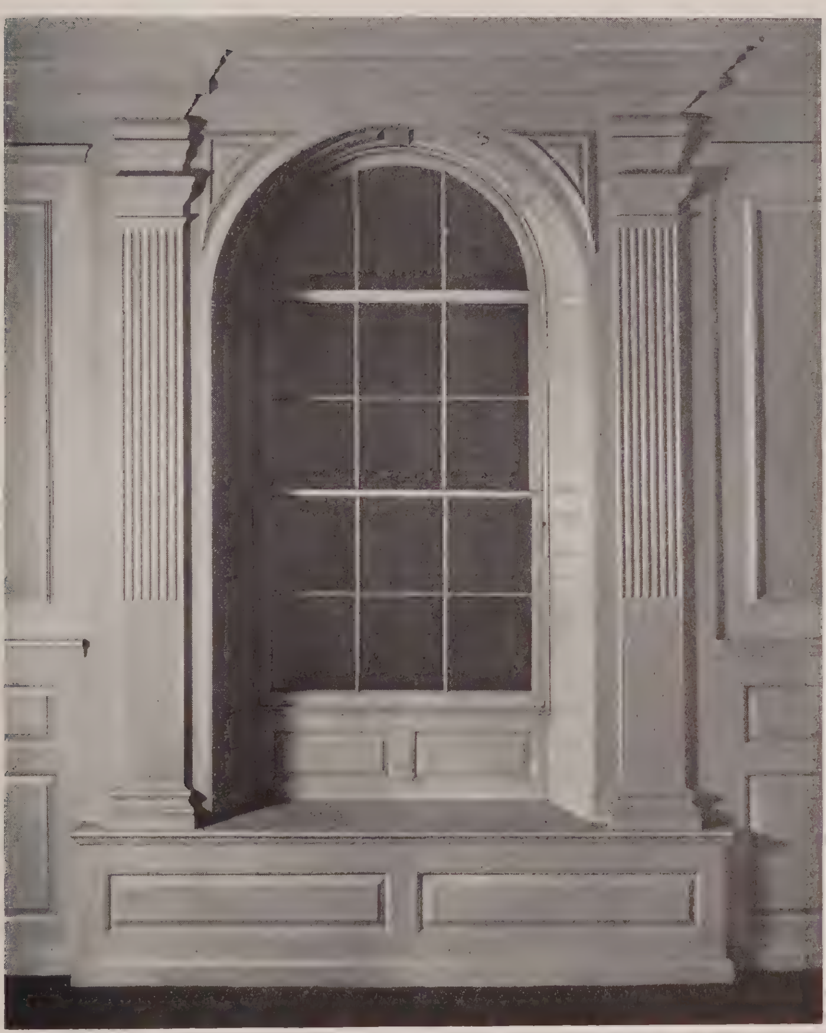
Church of Carmen, Celaya
Francisco Eduardo Tres Guerras, Architect

EARLY AMERICAN DETAILS

PLATE 46

MEASURED DRAWING

By MARY P. CUNNINGHAM



WINDOW IN SECOND FLOOR HALL

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THIS is an excellent example of American mid-eighteenth century interior woodwork. The early builders were fully aware of the value of developing the main axis of a room with some architectural feature as a terminus. This window is in the center of the end wall of a second floor hall where it immediately claims attention from being opposite the head of the staircase. The means of securing this emphasis are the simplest—a round-headed window framed by pilasters, with full entablature and a continuously paneled reveal and soffit. The classic severity of the mouldings, the proportions and scale are all admirable and deserving of the closest study.

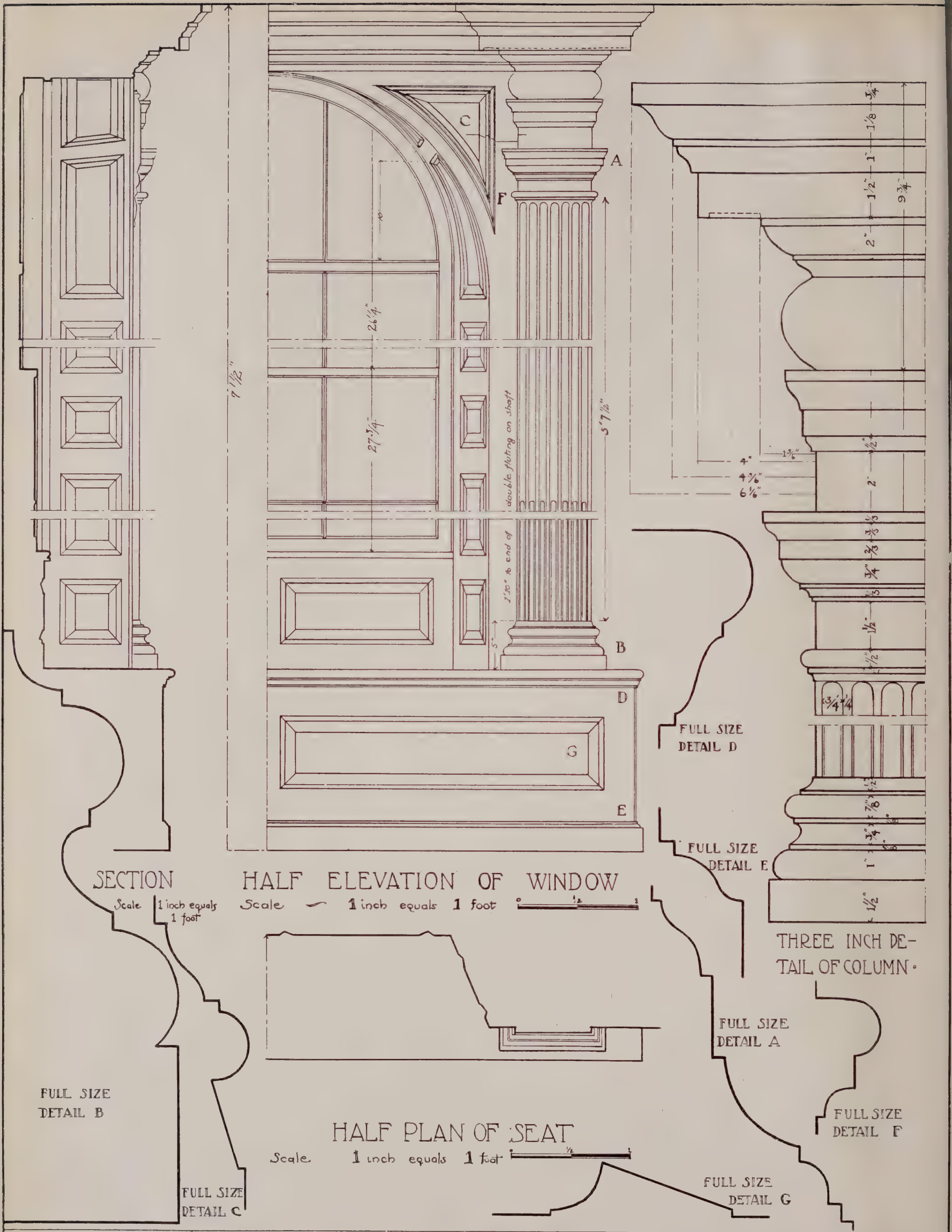

Plate 46
January 1923

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Measured & Drawn
By
Mary P. Cunningham

BUSINESS & FINANCE

C. Stanley Taylor, *Editor*

Building Survey for 1922 and Forecast for 1923

By C. STANLEY TAYLOR

ONE year ago, in December, 1921, THE ARCHITECTURAL FORUM undertook the making of an unusual survey in the field of building construction. This meant a definite effort to measure and classify probable building activity for the year 1922.

This investigation was carried out by obtaining from the offices of a large number of architects, confidential reports as to the building operations then on their boards for 1922 construction, and regarding projects which had progressed sufficiently far in negotiation to practically insure the beginning of construction within that year. It was felt that if the future market for building construction could be gauged with fair accuracy, such information would be of great value in the development of production programs of building materials and in the encouragement of increased financing of building construction.

The publication of the survey for 1922 met with responsive interest in every division of the building construction industry, and it is gratifying to record here that the forecast has met the test of the figures of actual construction, both in approximation of the volume of building and in classification of demand. Naturally, it could not be expected that the figures estimated for the future would prove to be exact, but in this instance prophecy and actuality have paralleled so closely that the survey herewith presented for 1923 is unquestionably justified.

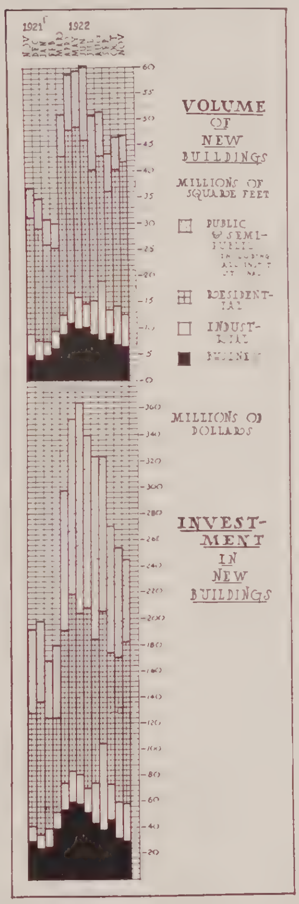


Fig. 2. Volume and investment in building construction during 1922 divided into four types

In the survey for 1922 a four billion dollar building year was predicted. Construction reports covering about three-quarters of the country show well over three billion dollars for the year, and taking into consideration the balance of the country it is quite evident that the total construction ran well over the four billion, a condition which was not anticipated, and certainly not measured in advance, through any medium excepting THE FORUM'S survey.

What Occurred in 1922

Building activity for the year 1922, together with various economic trends importantly affecting such activity, is graphically pictured in Fig. 1 showing the volume of new building; the amount of money invested in new building, and the trend lines indicating the course of building costs; general commodity costs; contemplated construction; money value of new construction, and square feet area of new construction.

Fig. 2 indicates a division of the volume and investment in building construction into the four general classes of public and semi-public building, residential building, and industrial and business building.

Following the various index lines on the chart showing monthly changes, it will be noted that as the index of building cost penetrated

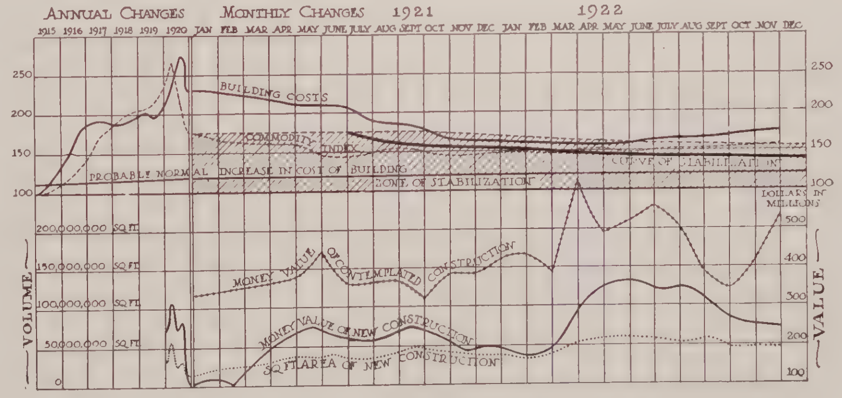


Fig. 1. The trend of building costs and other important factors affecting volume and cost of building construction in the United States

BUILDING TYPES	N. EASTERN STATES	N. ATLANTIC STATES	S. EASTERN STATES	S. WESTERN STATES	MIDDLE STATES	WESTERN STATES	U. S. A.
Dwellings (Under 20,000)	$16,622,000	$86,465,000	$12,825,000	$12,084,000	$59,160,000	$34,925,000	$222,081,000
" ($20,000 to $50,000)	11,668,000	41,828,000	8,587,000	10,552,000	33,468,000	12,757,000	118,860,000
" (Over 50,000)	6,045,000	27,481,000	2,031,000	6,113,000	21,077,000	10,444,000	73,191,000
Apartments	56,020,000	237,296,000	25,392,000	34,323,000	229,552,000	80,302,000	662,885,000
Hotels	33,589,000	141,146,000	27,683,000	40,765,000	205,332,000	60,475,000	508,989,000
Clubs, Fraternal, etc.	15,888,000	58,221,000	13,268,000	28,784,000	109,700,000	50,406,000	276,266,000
Churches	17,577,000	128,120,000	15,128,000	25,519,000	82,903,000	43,688,000	312,936,000
Community, Memorial	14,620,000	27,401,000	1,950,000	6,209,000	46,509,000	21,099,000	117,788,000
Welfare, Y.M.C.A., etc.	3,295,000	15,702,000	2,576,000	3,302,000	15,680,000	9,688,000	50,242,000
Hospitals	13,594,000	54,166,000	6,972,000	27,438,000	105,096,000	52,148,000	259,414,000
Office Bldgs.	21,157,000	88,877,000	18,089,000	26,359,000	190,486,000	82,603,000	427,570,000
Banks	17,608,000	54,328,000	8,835,000	18,783,000	154,482,000	38,669,000	292,705,000
Schools, Public Bldgs.	65,159,000	158,165,000	41,515,000	31,930,000	383,036,000	190,228,000	870,034,000
Theatres	9,573,000	34,847,000	2,759,000	7,381,000	29,388,000	17,943,000	101,891,000
Stores	11,113,000	35,383,000	6,826,000	7,480,000	58,361,000	27,723,000	146,887,000
Industrial	29,859,000	162,762,000	38,824,000	25,231,000	241,871,000	49,488,000	548,037,000
Automotive	11,988,000	35,942,000	2,799,000	8,386,000	52,464,000	15,190,000	126,768,000
Total Value of New Buildings	$355,375,000	$1,388,130,000	$236,059,000	$320,639,000	$2,018,565,000	$797,776,000	$5,116,544,000

Fig. 3. Estimated building activity in the United States for the year 1923 based on actual reports from 1767 architects' offices and conditions described in text herewith

into the zone of stabilization, a period of great activity developed in the spring and summer of 1922. Then came a condition effected by several factors aside from the natural seasonal change. These included the rail and coal disturbances, together with a depletion of manufacturers' stocks. The resulting increase in the cost of construction, which was first visible at the end of June, 1922, has since developed until general building costs are from 14 to 16 per cent higher than last spring. Naturally, this condition has affected the volume of new construction, although reports for November and December show a continuation of normal strength in the market and a considerable anticipation in the form of contemplated construction as measured by plans filed in building departments in all sections of the country.

In the field of building finance 1922 has been a most encouraging year. The investing public during this year has definitely returned to the building field as an outlet for conservative investment money, and at no time for many years has there been so much financing available for building loans and permanent mortgages. The large mortgage bond houses report an unusual volume of investment in their securities, and in the residential field the building and loan associations are lending in greater amounts than previously known.

Real estate activity has greatly increased because of the building boom, and judging from sales of vacant property recorded within the last few months, it is evident that there is great activity in obtaining sites not only for residential properties but for industrial, institutional and commercial buildings.

What 1923 Promises

This year, 1923, will show a greater volume of building activity than the year 1922! This prediction is based on the returns indicated in the comprehensive building survey and forecast for 1923, just completed by The Forum.

Last year The Forum survey was developed from confidential reports received from 955 architects' offices. The results of this survey were divided into ten building classifications. The present survey for 1923 is much more extensive and is based on reports received from 1767 architects with a division into 17 building classifications. These reports give a total amount of construction of $1,650,498,000. From these actual reports the various amounts of building, classified as to type and location given in Fig. 3, are derived and indicate the probable total value of new building for 1923 to be $5,116,544,000. The figures in this chart were arrived at by taking the actual reports from the offices of 1767 architects and multiplying these totals by the index figure of 3.1. This index figure has been arrived at by a comparison of the reporting offices with all architectural offices as to volume

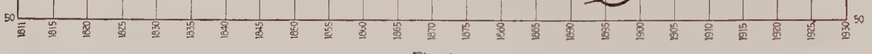
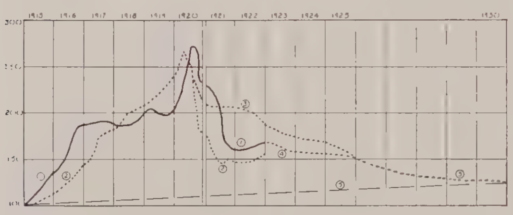


Fig. 4

(Above chart by I. F. McDonnell, Con. Engineer, Alabama Public Service Commission in *Engineering News-Record*)



The upper chart presents a graphic history of the general price trends since the year 1811. This shows the effect of the War of 1812, the Civil War and the World War.

The line designated as "A" is a composite curve of the two previous after-war price declines, showing that we have reached the present level of prices four years faster than after previous wars.

The lower chart is an interpretation of the upper chart from the year 1915 to 1930. Line 1-1 shows trend of cost of building with dotted line 4 a logical interpretation of future trend. Line 2-2 is trend of general prices with broken line 3-3 showing trend toward normal if at same speed as after previous wars. Line 5 shows normal building cost increase if uninterrupted by economic disturbance.

and classification of work from data maintained on each architectural office in the country and filed in the Architects' Registry which is kept in the office of The Forum. This information, together with comparative percentages of construction work not controlled by architects as indicated, justifies the assumption of the index figure 3.1, exactly as the index figure 5 was assumed for total valuations in the survey of 1922.

The Trend of Building Costs

While it is true that the cost of building has advanced considerably within the past few months, it is anticipated that this is but a wave in the general downward course of building costs, and that with renewed production activity and with relief from the rail and coal situations the cost of building should be on a downward trend again in the spring of 1923. It is highly important that all construction interests realize that the building market for 1923 is a market which must not be discouraged by high prices. It is a market which spells opportunity to take profits on volume of business rather than large profits on small business. The action of manufacturers, labor, finance and other factors which control building costs during the year 1923 will have much to do with the permanent prosperity of our industry. If a shortsighted policy is adopted, involving the forcing of high costs because of demand, prospective owners of buildings of every type will find practical reasons for putting off construction, and the confidence of the investing public, bankers and financiers will be destroyed, even as it was encouraged during the period of declining costs late in 1921 and early in 1922.

This question of the future trend of building costs, particularly of the cost of building materials, is one which is seriously debated with strong opinions both as to increase and decrease. A statement has been made by James A. Wetmore, Acting Supervising Architect for the United States Government, that within the next 18 months the country may look for a very material drop in the cost of building.

This fact has been seriously questioned by the Associated General Contractors of America in a recent bulletin statement which says:

"Not only has the cost of building been going up for several months, but so has the cost of materials. Wages in the building trades have more recently begun to increase also. The general average of wholesale prices has been increasing since the first of the year.

"The behavior of all these prices in increasing during a time of recovery from business depression is entirely normal. It is a phenomenon which always occurs during like periods. We believe it is a very strong indication that prices in general have been stabilized for the present on a new price level in the neighborhood of 70 per cent higher than that which prevailed in 1913.

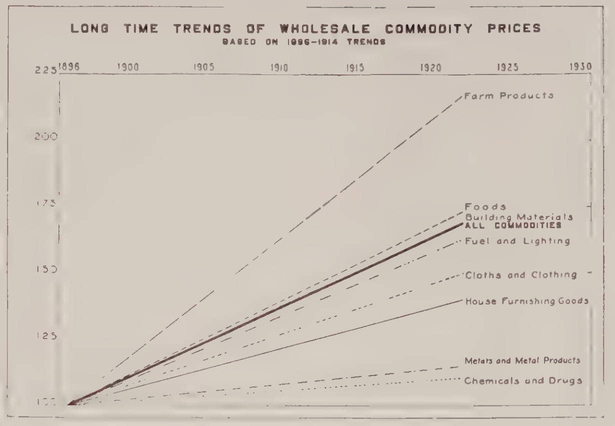


Fig. 5. Prepared by the Federal Reserve Bank of Boston, based on Commodity Price Index of the U. S. Department of Labor. Note how closely building materials costs follow composite commodities

"Instead of expecting that building costs will be materially lower 18 months from now, we anticipate that they will continue to increase during the great part of that period and that they will be at that time, perhaps, at about the beginning of a decrease, but at a point higher than the present. We believe, further, that the decrease which may be expected to begin at about that time will not go to a point very much below the figures reached during the past winter."

In explaining their reasons for these opinions, contractors say that the costs of building materials are going up partly because they are partaking of the general tendency of prices to rise during this part of the economic cycle, and partly because we are experiencing a building boom of unprecedented volume. Wages of building labor are increasing partly because of the shortage brought about by this same building boom and partly because of a recovery in other lines of industrial activity, which

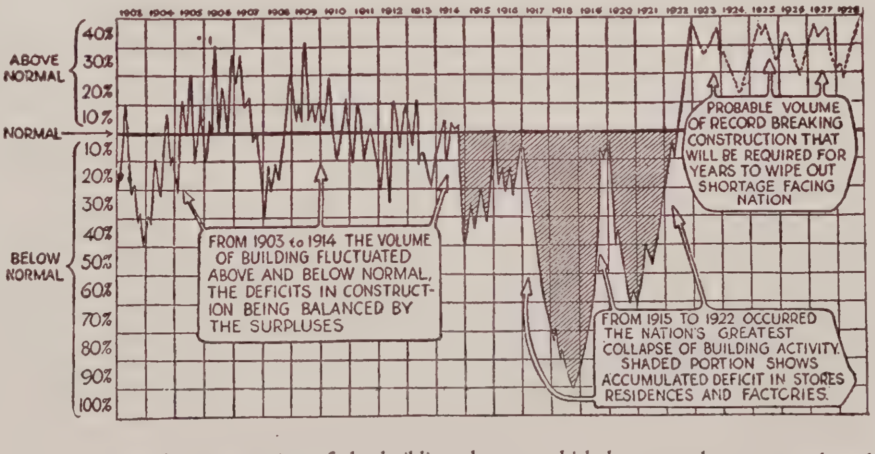


Fig. 6. A graphic presentation of the building shortage which has created an unprecedented demand for new buildings of every type. From *New York Times,* Sept. 3, 1922

is already beginning to produce labor shortage. It is the opinion of the Associated General Contractors, however, that "the building boom shows no signs of abating. For six successive months the figures for contracts let have been record-breaking. The slight recession of August is less than the usual seasonal recession. As a result of very painstaking investigations it has been estimated that the deficit in building, the country over, is so great tha tbuilding could continue for ten successive years, beginning with this year, at 25 per cent above normal before catching up with that deficit. We do not predict any such sustained activity, but we do point to the figures as proof that there is no possibility of the present building boom's coming to an end within the next few months because of having completely filled the demand for new construction." It is the opinion of the Research Department of The Forum that the present increase in prices is a natural reaction due to factors such as depletion of stocks, coal and rail disturbances and similar influences, and that the general trend of prices will be downward without any further increase, and probably with a decrease showing again early in 1923.

In Fig. 4 the general commodity price trend since 1811 is portrayed together with an interpretation of the decline of prices since the world war and a prediction of the trend of building costs. In analyzing price trends and building costs for any period of years it is very interesting to note that the trend line of building costs usually follows very closely the course of the trend line of general costs.

In Fig. 5 is shown the long time trend of wholesale commodity prices. It will be noted that the cost of building materials almost parallels the line of all commodity prices for the long period from 1898 to 1922.

The first great waves of speculative building and construction of the cheaper type have passed, and 1923 will be remembered as a year in which a great volume of good building construction was produced. It is evident that residential construction will continue in volume almost equal to that of 1922, with greater activity in the more expensive types of dwellings and probably in the hotel field. Fig. 7 shows the allocation by percentage of public demand for new buildings in 1923 and approximates the probable divisions of investment to be made.

Industrial construction indicates surprising strength, and the fact that so much of this work is reported by architects shows that a large proportion of the volume of industrial construction for next year will be of a permanent, well designed character. Much of this construction represents plant expansion by well established manufacturing concerns, together with the establishment of new industries of substantial character.

All evidence points to the fact that there will be available an ample amount of financing for this great volume of projected building construction.

The problem of labor conditions is one on which no forecast can be made, but it is quite probable that 1923 will show a fairly good spirit of co-operation between employers and labor in the building industries. Labor leaders are becoming more far-sighted, and in certain of the trades there is a growing interest in the apprentice problem and in the idea of admitting a larger proportion of new men into the ranks. Certain reactions must be felt by the unions as the enforced shortage of mechanics in some of the trades brings about an increase in the amount of work performed by mechanical methods or by substitution of materials not within jurisdiction of the particular trade in question.

Considering all facts, it is certain that 1923 should be a year of sound prosperity for all branches of the construction industry, provided no advantage is taken of conditions either by the cheapening of the quality of materials or the enforcement of prices which represent too great a margin of profit.

The great drop in construction costs is over, and those who wish to build may do so in 1923 without fear of loss through the shrinkage of existing building values incidental to rapid price deflation.

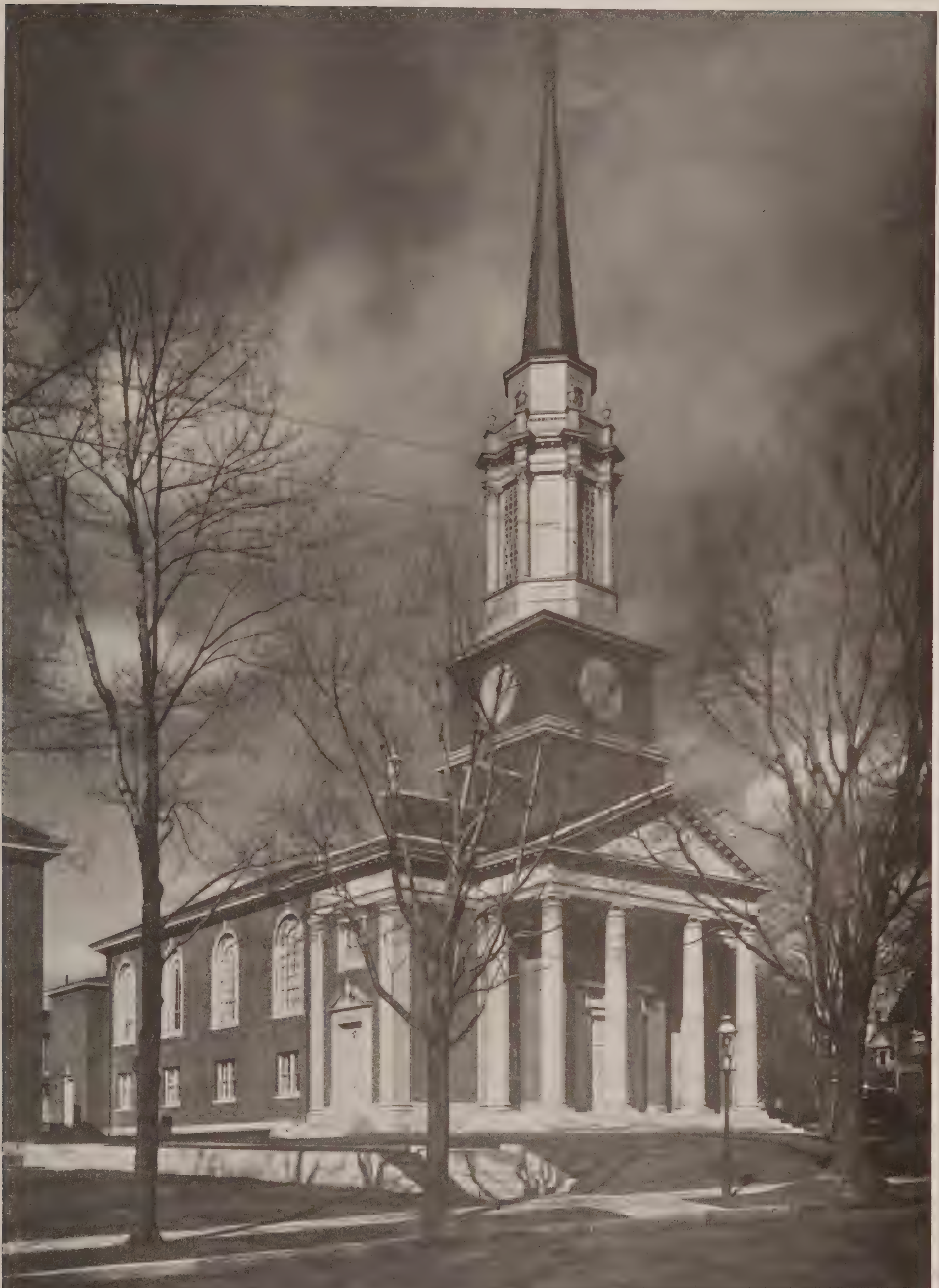
Plan your buildings efficiently, use good materials and equipment, and there need be no fear of loss of principal or failure to enjoy good investment or utility returns. Remember that the long swing of building investment values means keen occupancy competition at certain periods. Cheap construction and careless planning represent false economy and are an open road to foreclosure.

Insist on plan economy, which means efficiency of purpose; on integrity of construction to insure low maintenance and depreciation costs, and on good architecture which includes both these factors.

It is their appreciation of practical requirements as well as their skill in the art of three-dimension design which is establishing the architects of America as the leaders of their profession today, and architecture, in its broadening scope of service, is becoming recognized as a highly important contribution to the strength of the economic structure of the United States.

GEOGRAPHICAL DIVISIONS	Dwellings under $20,000	Dwellings $20,000-50,000	Dwellings over $50,000	Apartment Buildings	Hotels	Clubs and Fraternal	Churches	Cummunity and Memorial	Welfare Y.M.C.A. etc	Hospitals	Office Buildings	Banks	Schools and Public Bldgs.	Theatres Motion Pictures	Stores	Industrial	Automotive
	PER CENT	PER CENT	PER CENT	PER CENT	PER CENT	PER CENT	PER CENT	PER CENT	PER CENT	PER CENT	PER CENT	PER CENT	PER CENT	PER CENT	PER CENT	PER CENT	PER CENT
Northeastern States	4.7	3.3	1.8	15.7	9 4	4.4	4.9	4.2	1.	3.8	6.	5.	18.3	2.7	3.2	8.4	3.2
North Atlantic States	6.2	3.	2.	17.	10.1	4.2	9.	2.	1.1	4.	6.4	4.	11.4	2 6	2.5	11.7	2.6
Souteastern States	5.4	3.8	1.	10.8	11.7	5.6	6.4	.8	1.	3.	7.6	3.9	17.5	1.	2.9	16.4	1.2
Southwestern States	3.8	3.3	2	10.7	12.7	9.	8	2.	1.	8.5	8.2	5.8	9.9	2.3	2.3	7.8	2.6
Middle States	3.	1.8	1 3	11.4	10.2	5.4	4.2	2.3	.7	5.2	9.4	7.5	18.9	1.4	2 8	11.9	2.6
Western States	4.3	1.6	1.3	10.4	7 7	6.3	5.4	2.7	1.2	6.5	10.3	5.	23.8	2.2	3.4	6.1	1.8
National Percentages, U.S.A.	4.7	2.8	1.7	12.6	10.4	4.8	6.4	2.	1.	5.1	8.	5.3	16.6	2.	2.8	10.4	2.4

Fig. 7. Tabulation showing by percentages approximate strength of demand for various types of new buildings in each section of the United States for the year 1923. Based on reports from 1767 architects' offices

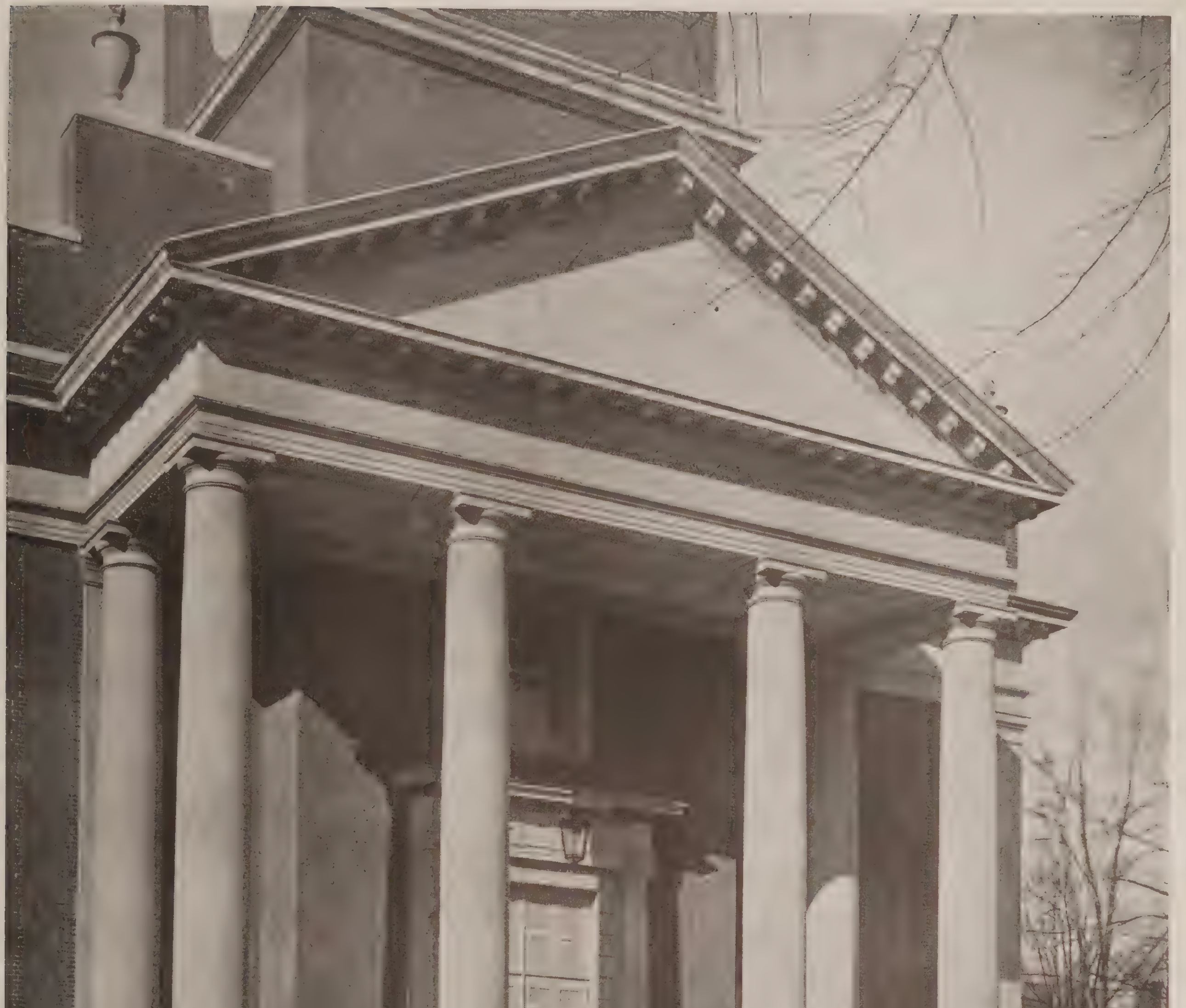


Photos by John Wallace Gillies

GENERAL EXTERIOR VIEW

CENTRAL PRESBYTERIAN CHURCH, MONTCLAIR, N. J.

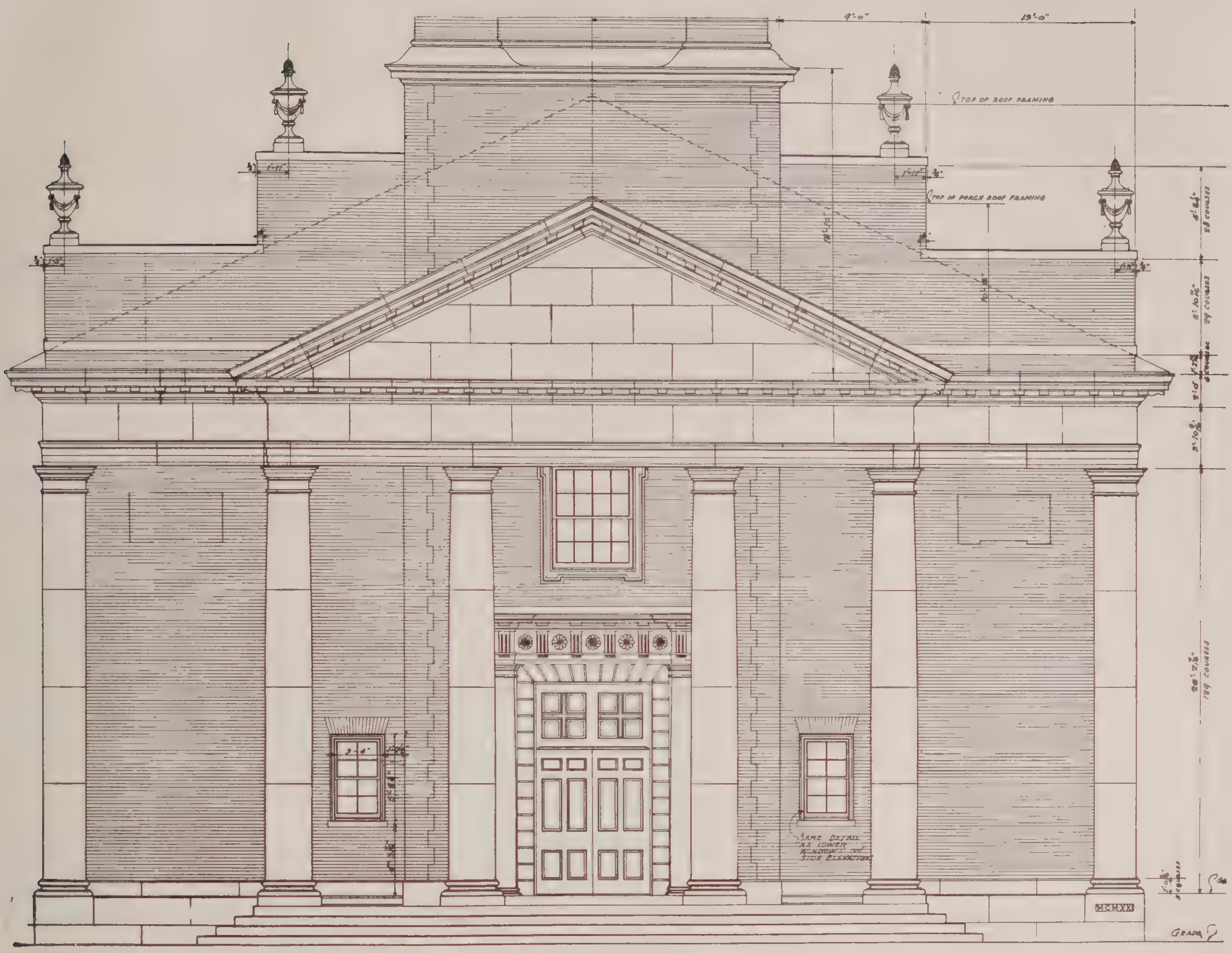
CARRERE & HASTINGS, ARCHITECTS; SHREVE, LAMB & BLAKE, ASSOCIATED



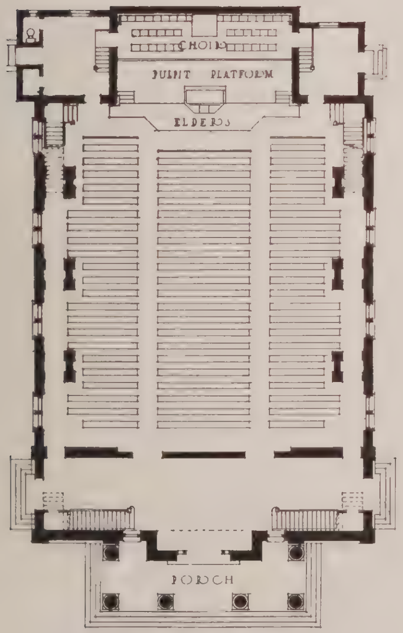
DETAIL OF PORTICO

CENTRAL PRESBYTERIAN CHURCH, MONTCLAIR, N. J.

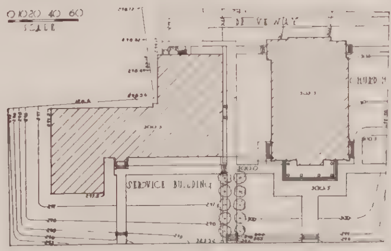
CARRERE & HASTINGS, ARCHITECTS; SHREVE, LAMB & BLAKE, ASSOCIATED


9'-0"
13'-0"
TOP OF ROOF FRAMING
TOP OF PORCH ROOF FRAMING
SAME DETAIL AS LOWER WINDOWS ON SIDE ELEVATION
MCMXX
GRADE

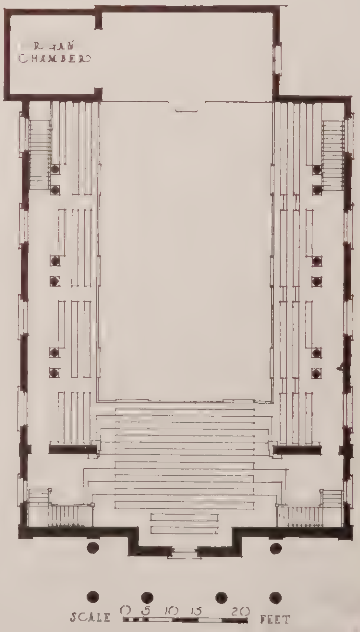
DETAIL OF PORTICO



FIRST FLOOR PLAN



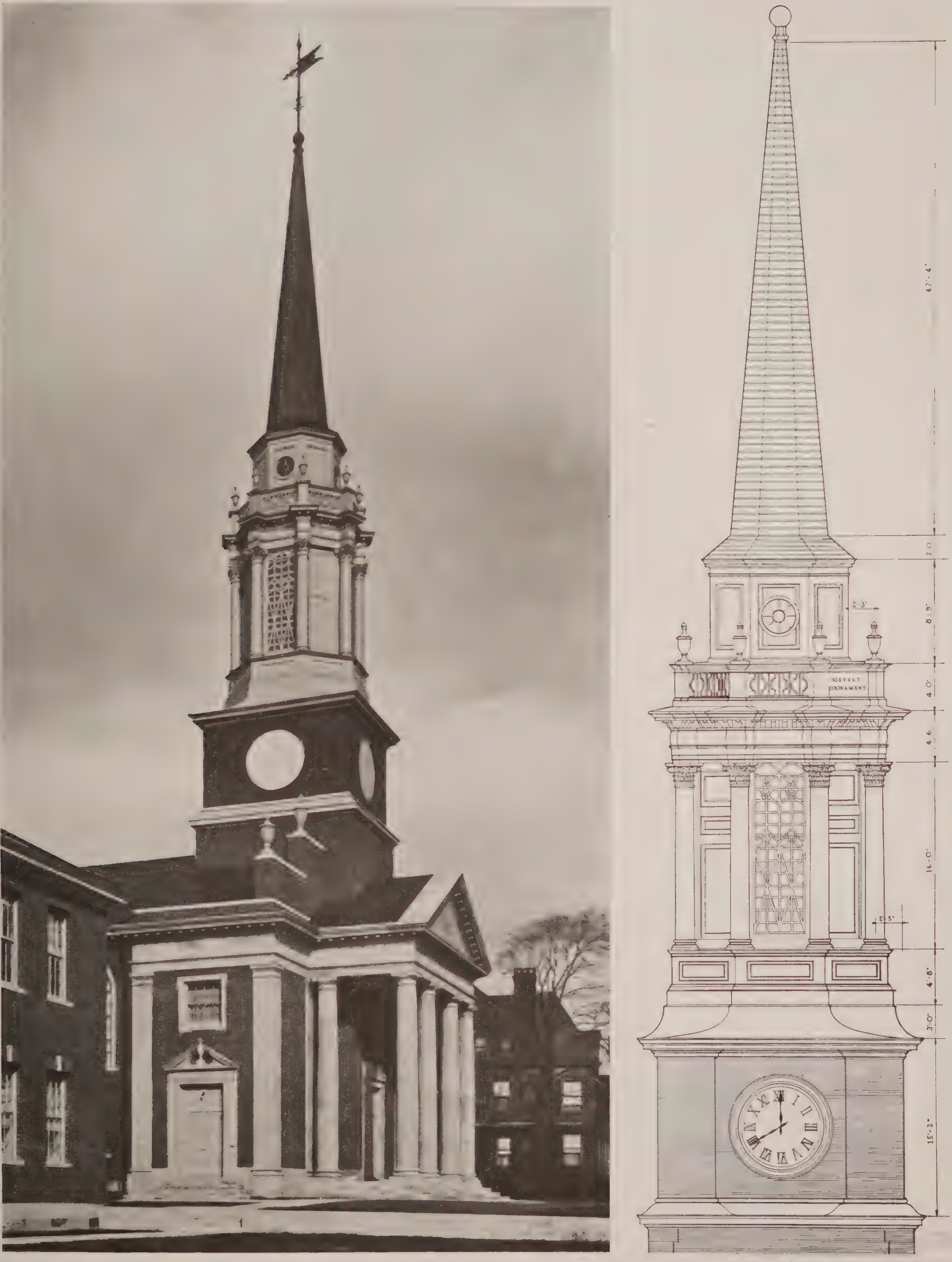
PLOT PLAN



GALLERY FLOOR PLAN

CENTRAL PRESBYTERIAN CHURCH, MONTCLAIR, N. J.

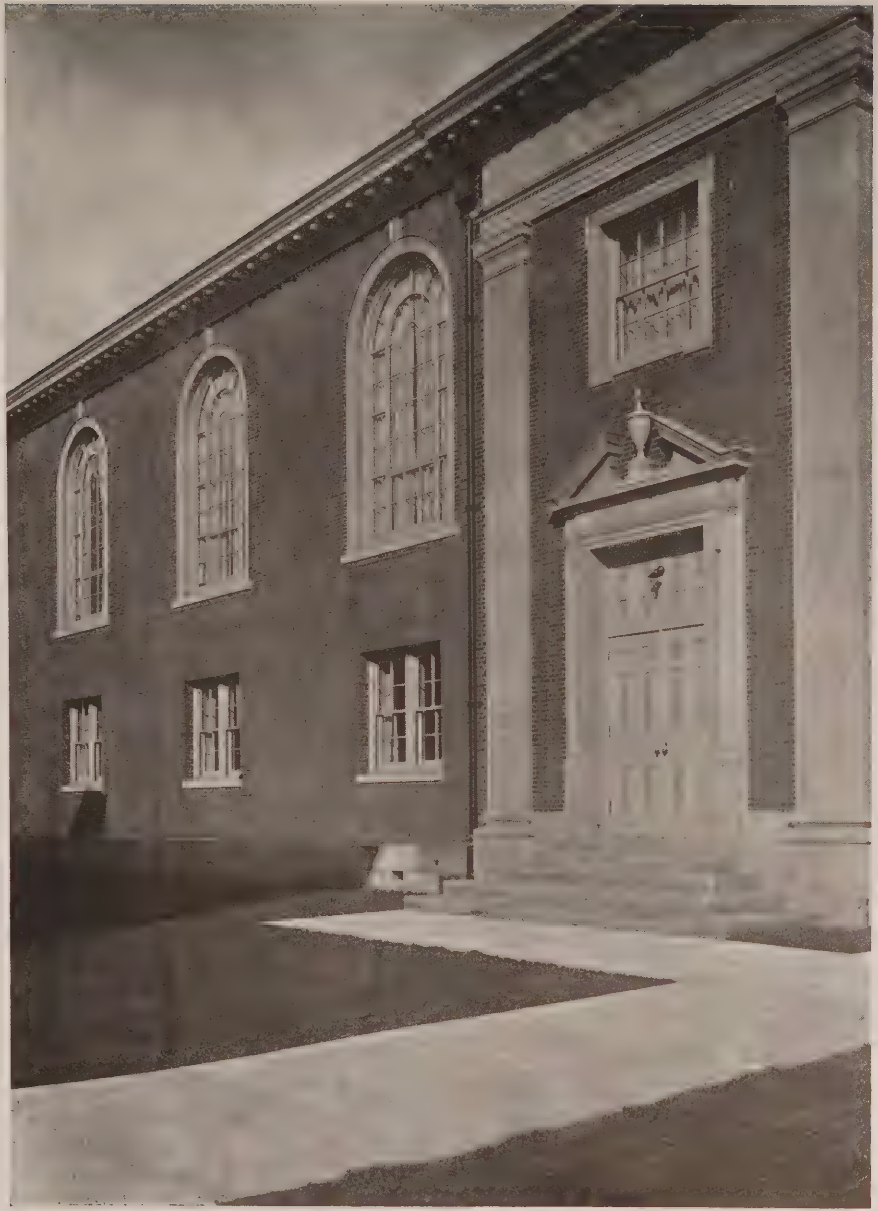
CARRERE & HASTINGS, ARCHITECTS; SHREVE, LAMB & BLAKE, ASSOCIATED



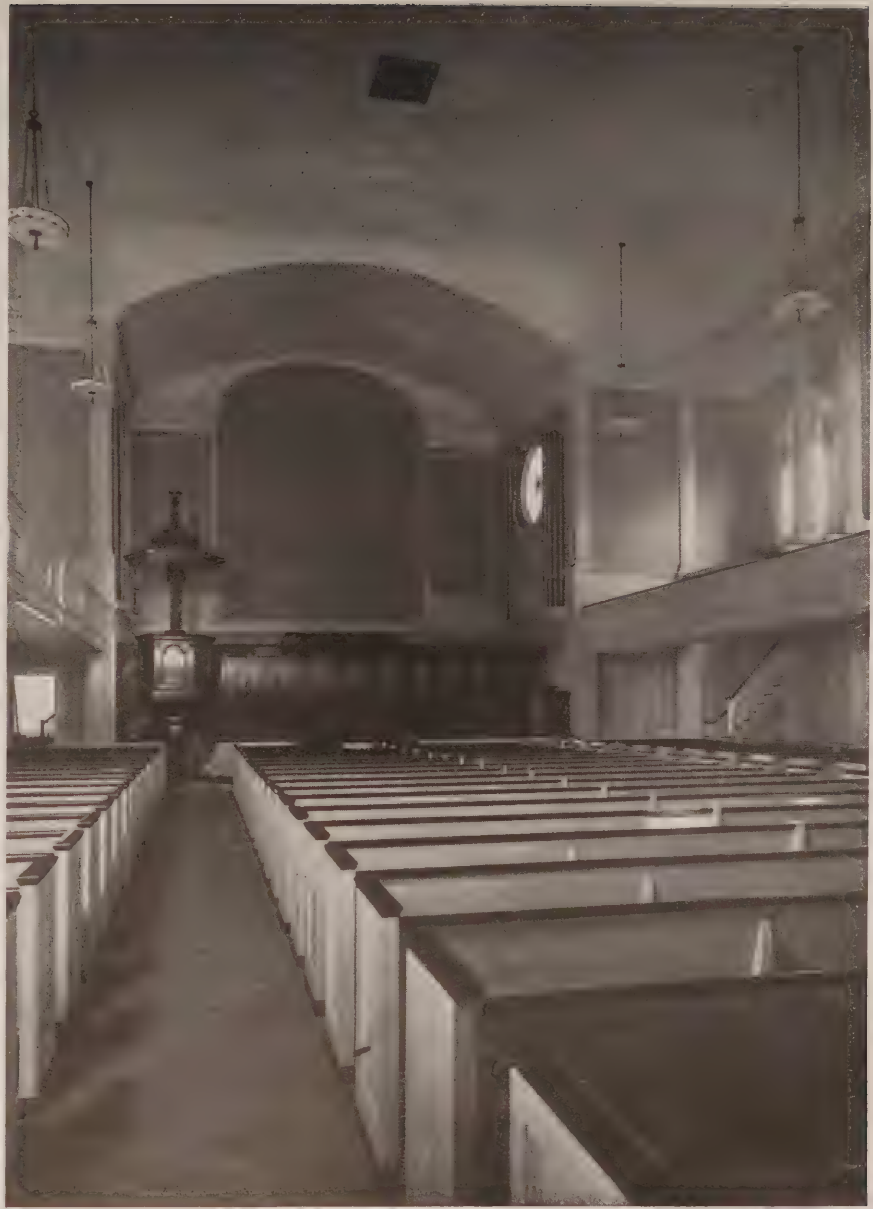
DETAILS OF STEEPLE

CENTRAL PRESBYTERIAN CHURCH, MONTCLAIR, N. J.

CARRERE & HASTINGS, ARCHITECTS; SHREVE, LAMB & BLAKE, ASSOCIATED



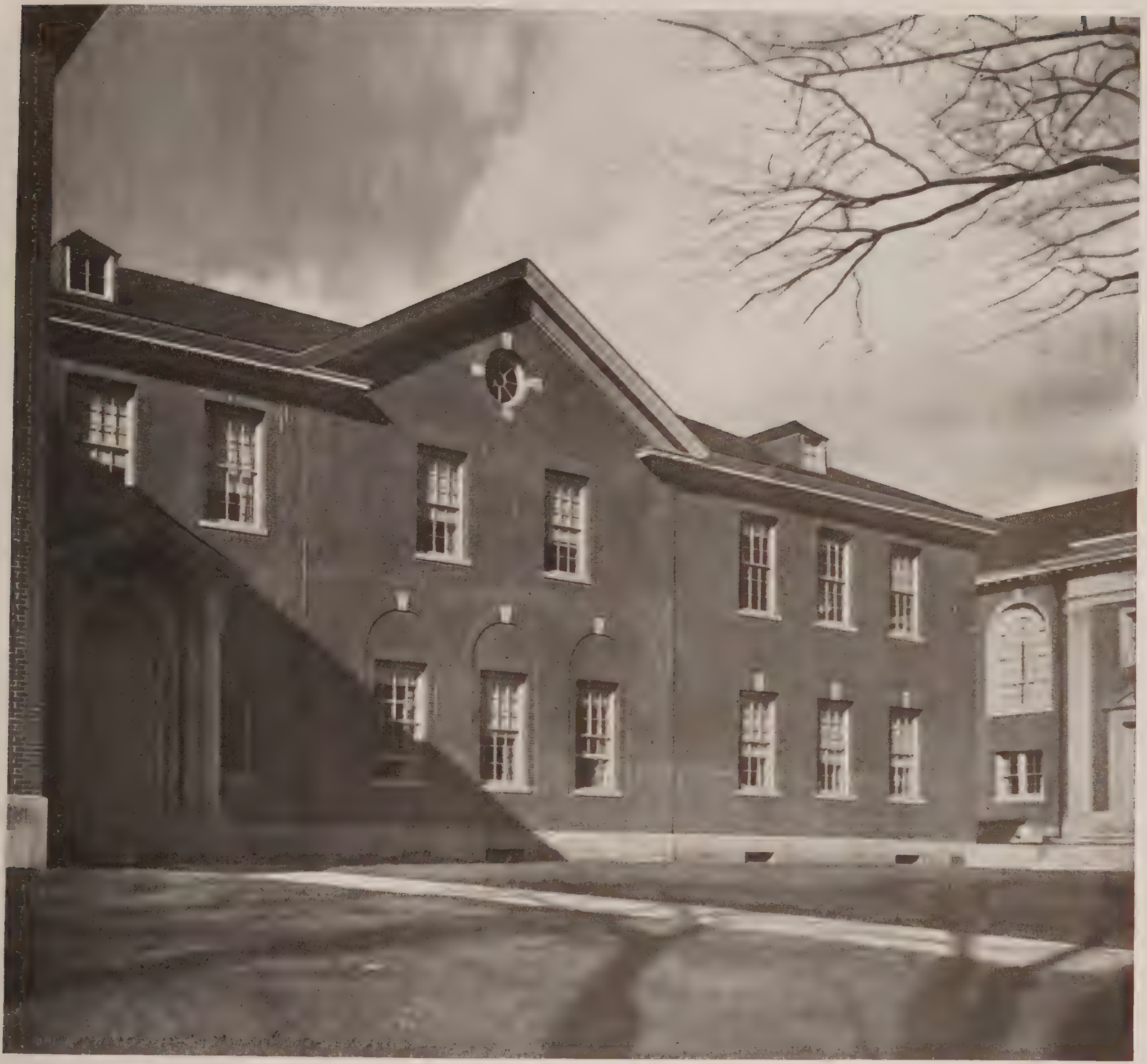
DETAIL OF SIDE ELEVATION



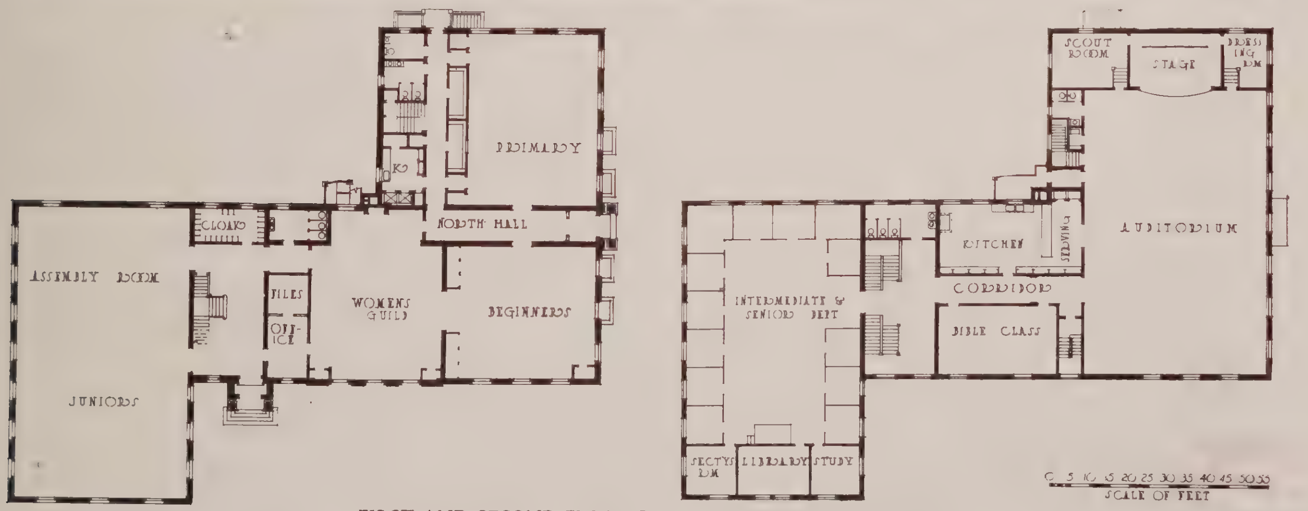
INTERIOR OF AUDITORIUM

CENTRAL PRESBYTERIAN CHURCH, MONTCLAIR, N. J.

CARRERE & HASTINGS, ARCHITECTS; SHREVE, LAMB & BLAKE, ASSOCIATED



VIEW OF SERVICE BUILDING



FIRST AND SECOND FLOOR PLANS OF SERVICE BUILDING

CENTRAL PRESBYTERIAN CHURCH, MONTCLAIR, N. J.

CARRERE & HASTINGS, ARCHITECTS; SHREVE, LAMB & BLAKE, ASSOCIATED

Two Recent Chicago Playhouses

THE TWIN SELWYN AND HARRIS THEATERS

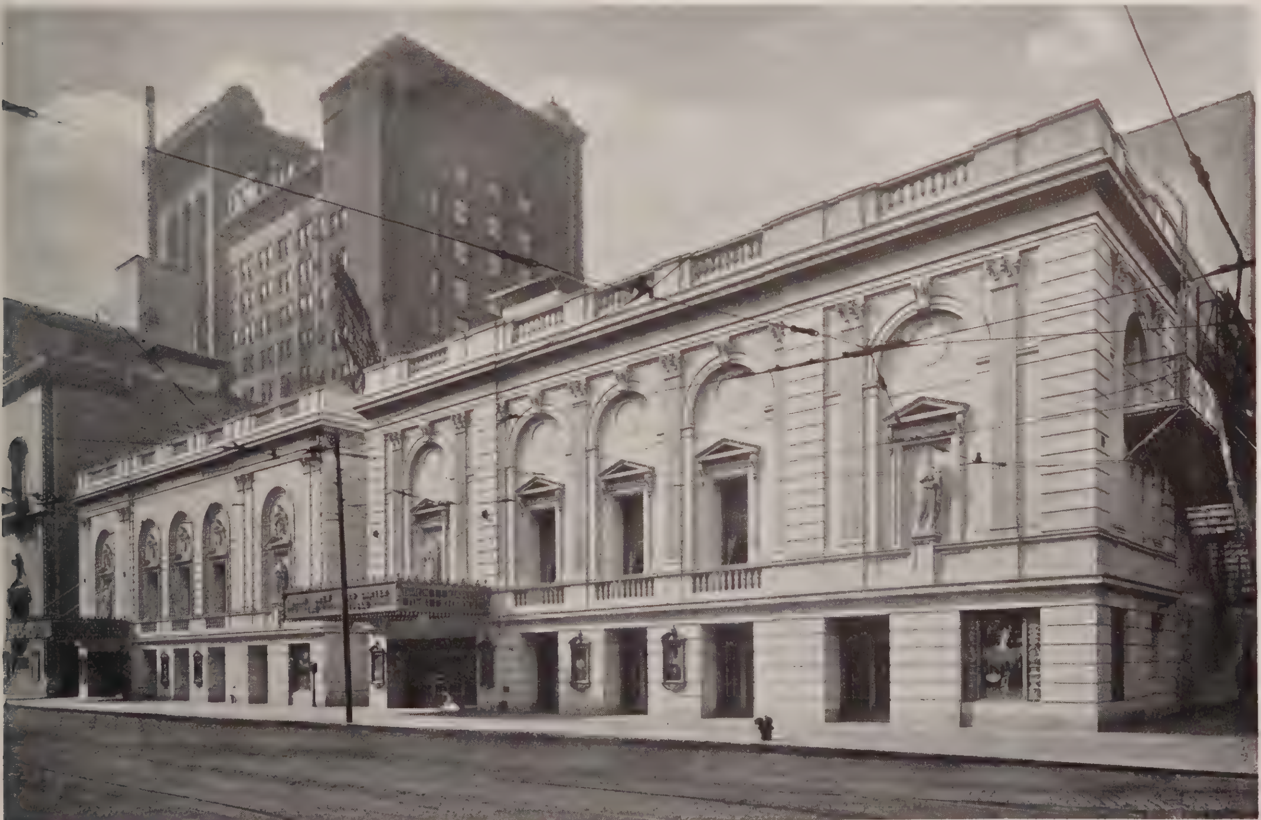
C. HOWARD CRANE, KENNETH FRANZHEIM, ARCHITECTS

ONLY occasionally does an opportunity come to a modern architect of designing adjoining buildings in a manner which makes for harmony and symmetry, each structure possessing its own individuality and character while contributing its share to the well ordered dignity of the group, large or small, of which it is a part. An opportunity of this kind, productive of excellent results, and full of suggestions as to what might be achieved upon a somewhat more ample scale, was recently presented in Chicago in the building of the Selwyn and Harris Theaters by the same architects.

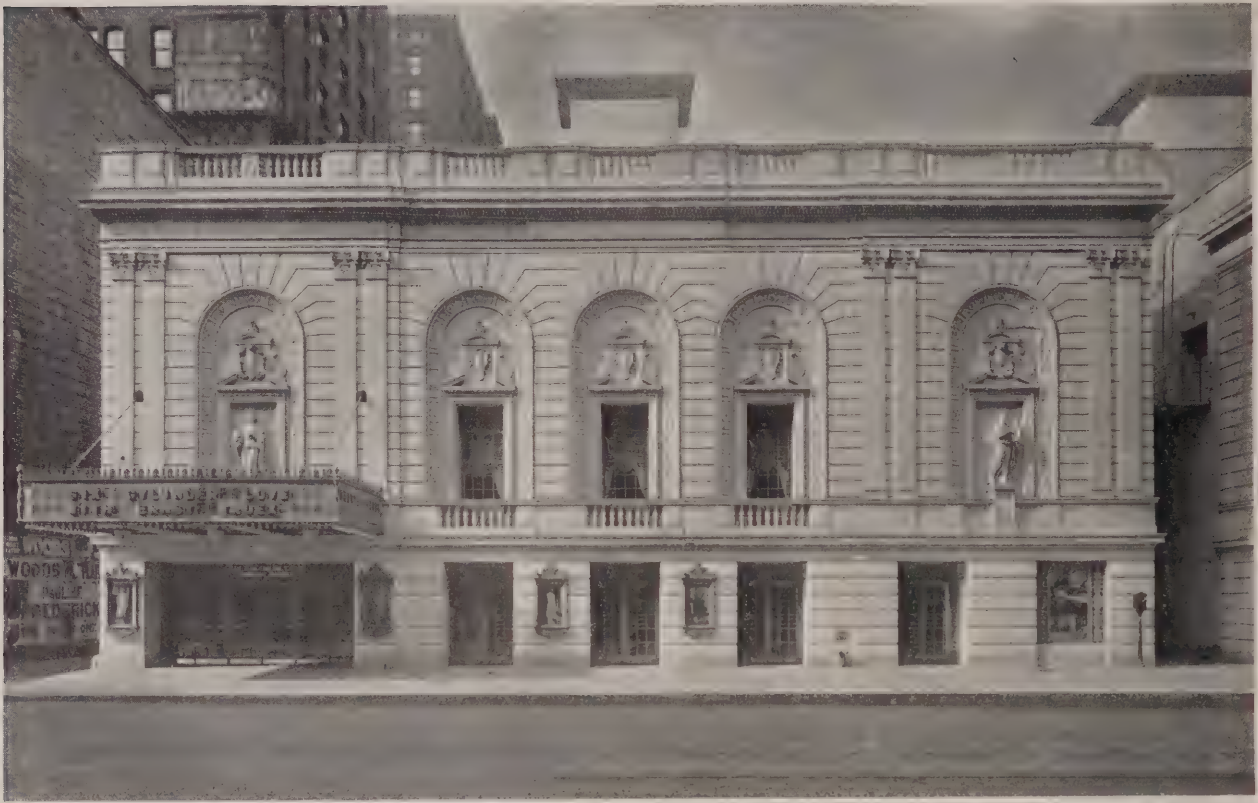
The fact that the two structures were to be occupied exclusively as theaters and not as office or loft buildings, in which theaters were to be masked or concealed, added considerably to the interest of the problem and aided in securing the beauty of the completed result. The twin structures are by no means identical in appearance or even in exterior arrangement, but their heights and chief characteristics are in complete accord, and the eye of the observer notes with satisfaction the long horizontal lines of their lower or basement stories and the parapets before the windows, the round Roman arches and the pilasters of their upper facades, and finally the strong, vigorous lines of the parapets which are placed above the cornices. The material of the exteriors is light toned terra cotta with color suggested in the trim of the windows, the canopies over the main entrances, and the bulletin boards used at various places.

The fact that each building is exclusively devoted to an individual theater has had its due effect upon the plan, for since no provision must be made for shops, with the approaches to the theater made of secondary importance, the entire front of each building has been given up to providing adequate entrances which lead directly into the theater auditorium proper. The lobby, containing the ticket offices, may be open the greater part of the time, the other doors, leading from the auditorium to the sidewalk being opened only when an audience is leaving the theater.

The interior of the Selwyn Theater might be described as being a sumptuous though refined development of the styles of the English renaissance, exhibiting certain characteristics of what would be regarded as Georgian architecture and decoration while in certain other details suggesting uses which are more closely associated with the reign of Queen Anne. The walls from the carpeted floor to the coffered ceiling are paneled with the finest English

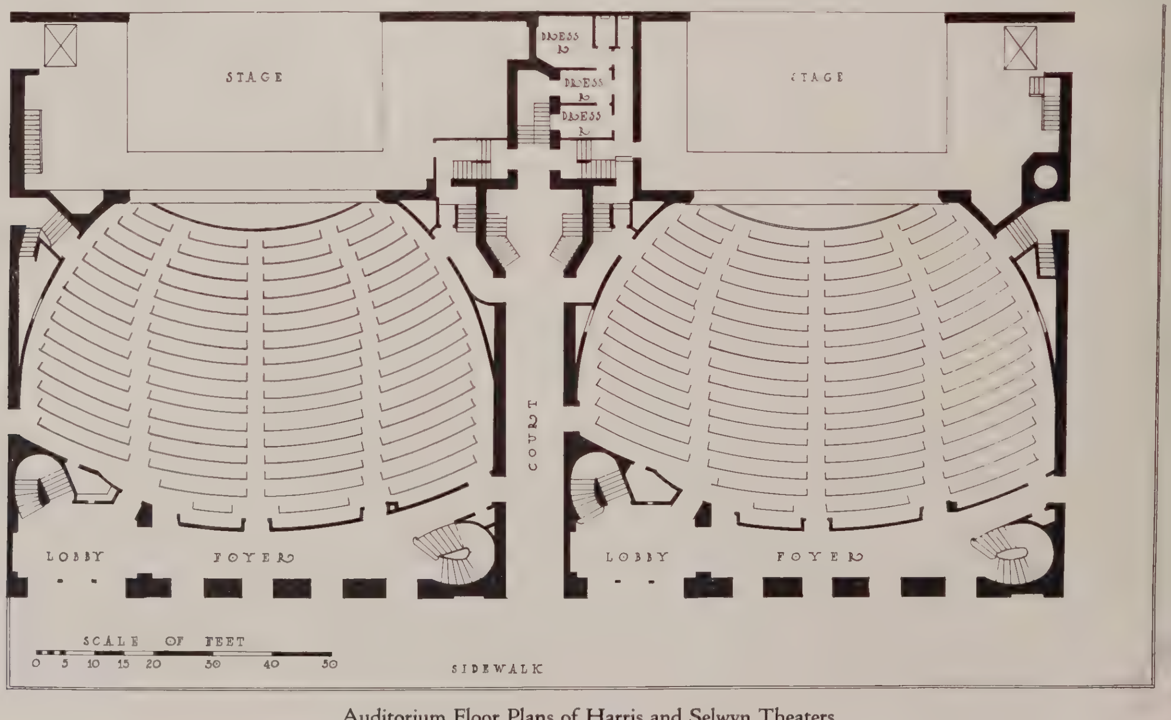


Exteriors of the Twin Theaters, the Harris and Selwyn, Chicago

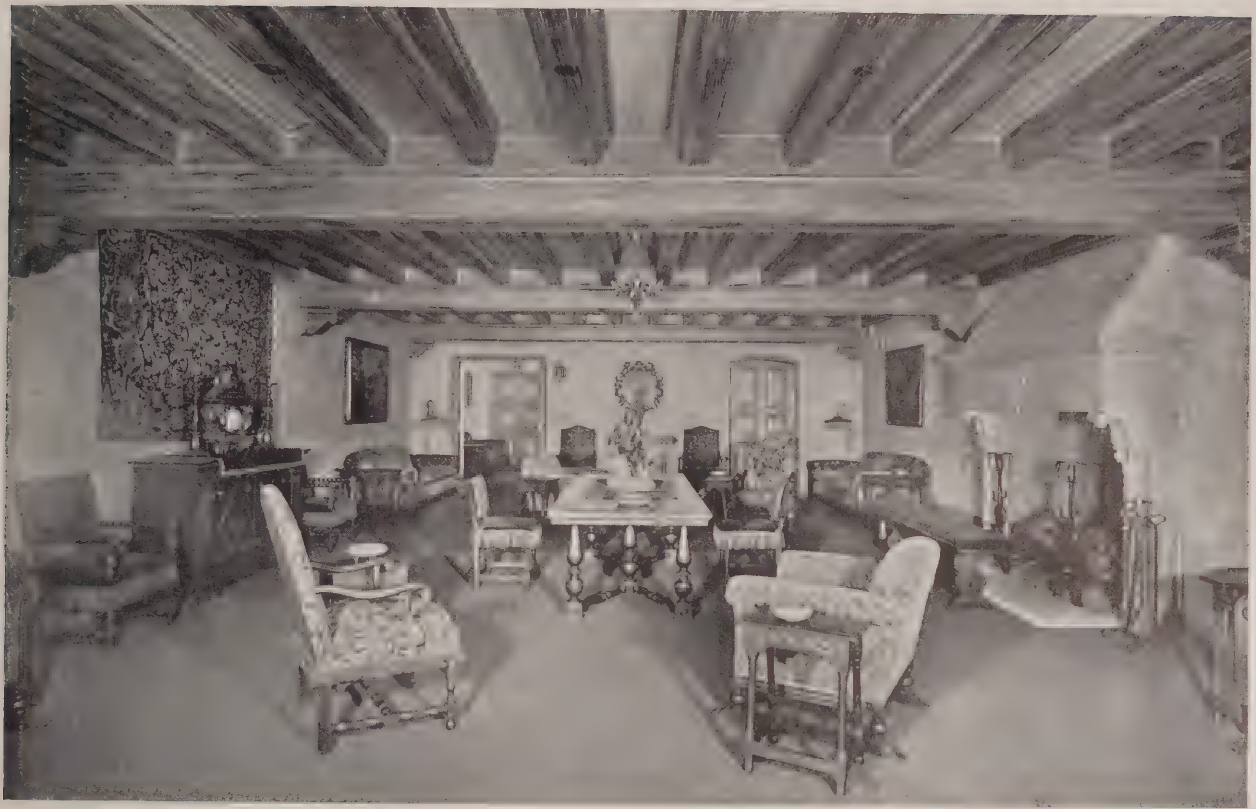


Detail of Harris Theater Facade

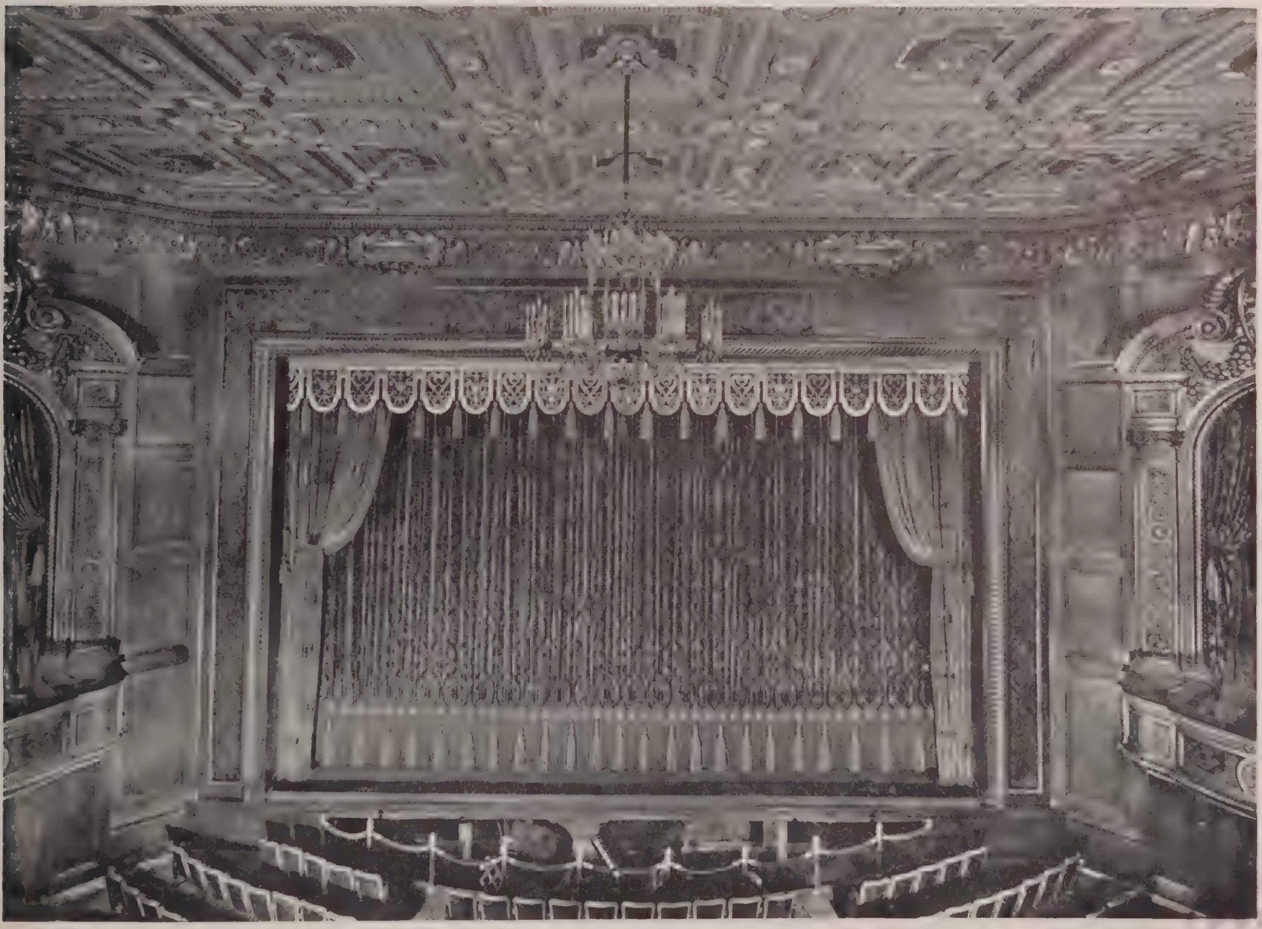
walnut, especially selected because of its rich grain and texture and for the mellow softness which this wood possesses. The walls are divided into large panels entirely devoid of carving excepting above the proscenium arch, around the boxes and in certain other places where carving in high relief after the manner made popular by Grinling Gibbon emphasizes the rich severity of the paneled walls. In contrast with the soft brown of the walls the ceiling of the theater is elaborately coffered and polychromed in antique green, cream and gold, the coloring being toned to produce the effect generally conferred by age. Lighting fitments, whether hung from the ceiling or used as wall lights in the boxes and at other points in the auditorium, are of cut crystal and gilt, producing a sumptuous appearance



Auditorium Floor Plans of Harris and Selwyn Theaters



MAIN LOUNGE OF HARRIS THEATER



PROSCENIUM OF HARRIS THEATER, CHICAGO

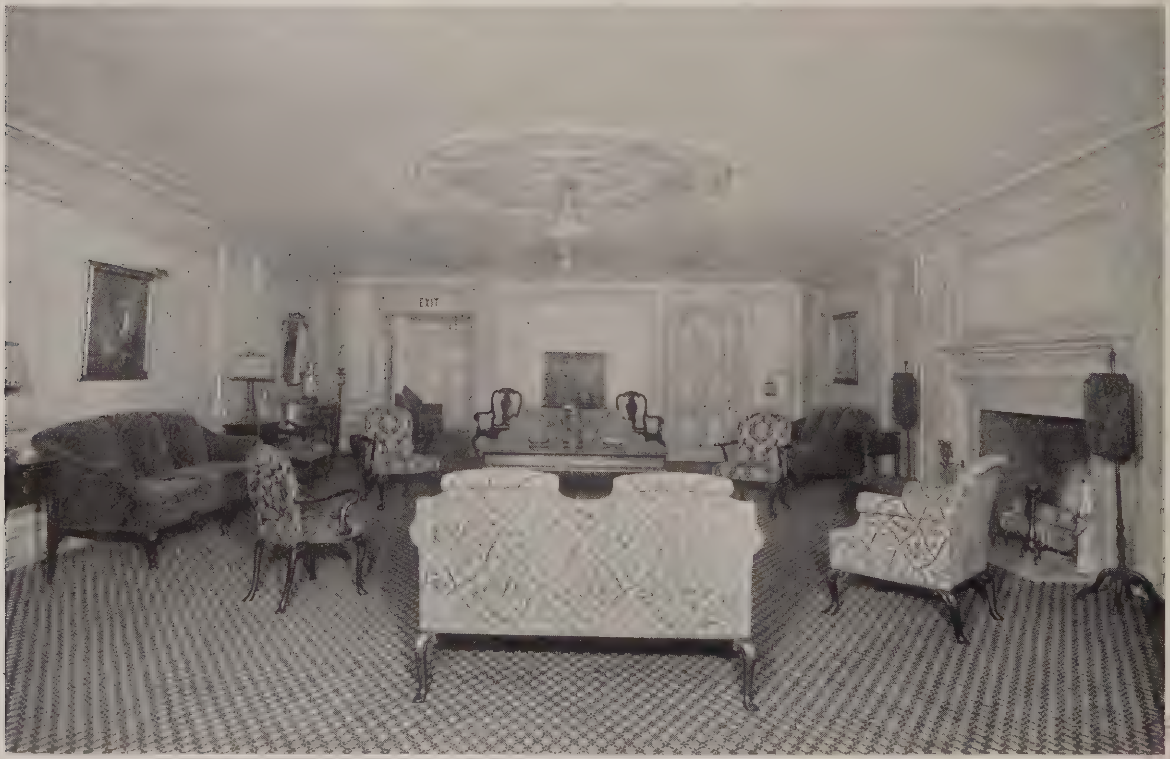
C. HOWARD CRANE, KENNETH FRANZHEIM, ARCHITECTS

when seen against the walnut paneling, all this splendor of effect being enhanced by the use in draperies at the proscenium and around boxes of French silk in green and gold, arranged in rather simple fashion and avoiding the elaborate festoons, cascades and superabundant valances often seen in theaters. The entire effect is that of richness, but of richness restrained by good taste.

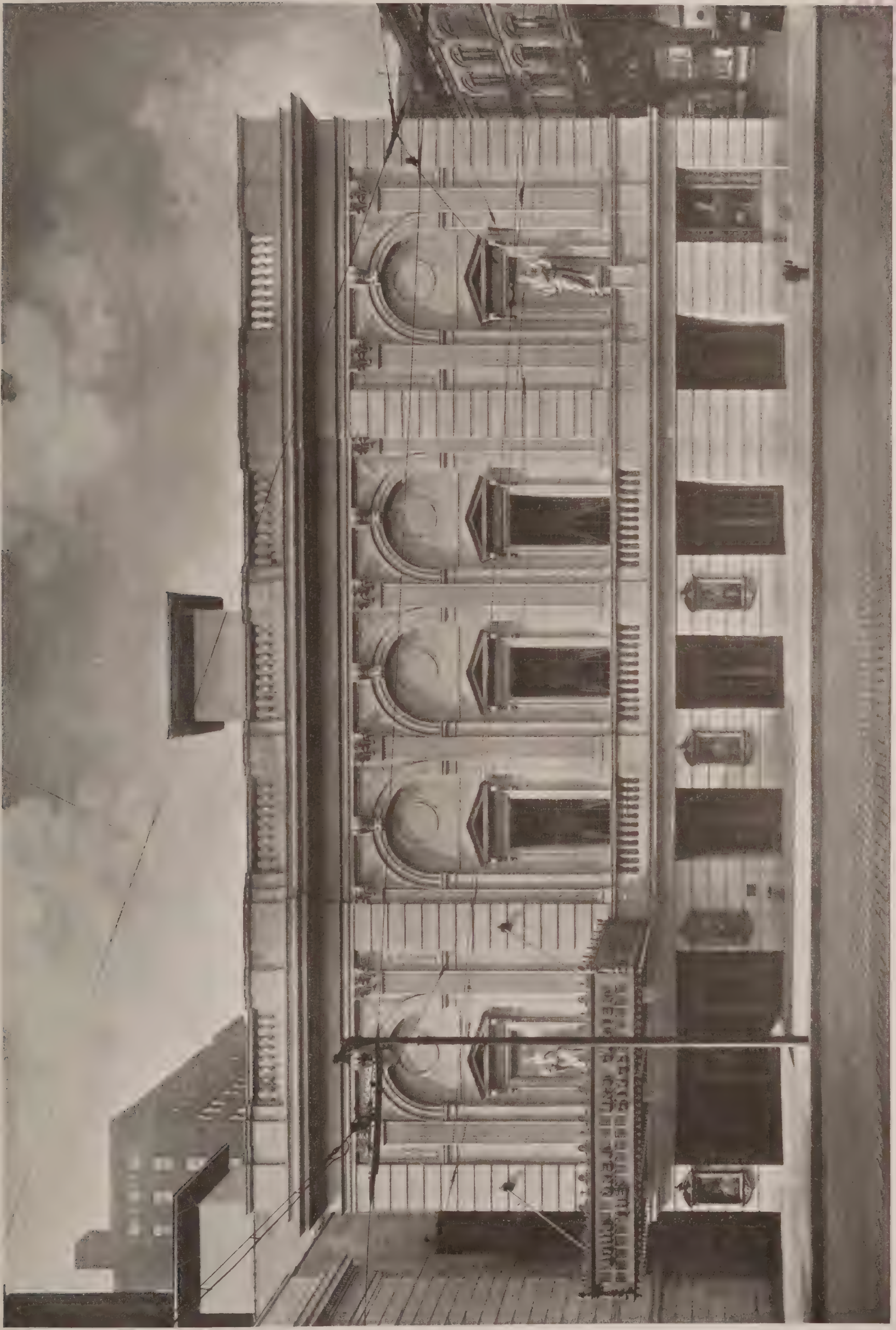
Fully as successful as the Selwyn is the Harris Theater next door. Here the architecture and decoration are not inspired by the English renaissance of the seventeenth and eighteenth centuries but by that of Italy two centuries earlier, this interior suggesting Florence at the height of her splendor. Here again the walls are paneled with walnut, but now the wood is not English but Italian and embellished with elaborate intarsia and ornament in gold. With the richness of walnut panels and intarsia as a background, the details of proscenium arch and boxes are worked out in full color which is repeated in the Italian renaissance ceiling, and the curtain and the draperies about boxes are of crimson velvet.

In both these theaters the notes established by the auditoriums themselves are sustained throughout the entire buildings. The same effect of luxury has been given to the lobbies, the foyers, lounges, smoking rooms, women's rest rooms and managers' offices. While maintaining the note of luxurious comfort through all these departments there has been no monotony of effect or repetition of decoration. The sumptuous Georgian architecture and decorative treatment of the Selwyn's auditorium, for example, are suggested in the far simpler Georgian treatment of the main lounge in the basement, where wood paneled walls are painted in parchment color, creating an excellent background for color in paintings. The women's rest room is finished with apple green walls and fitted with furniture painted parchment color and illuminated with brilliant color after the manner of Venetian furniture, while the men's smoking room has its walls paneled in old ivory tones with walnut furniture.

Of all these accessory rooms in the two theaters, those which might seem to many to be most interesting in certain respects are the main lounge and the smoking room of the Harris Theater, which are based upon certain apartments in the Davanzati Palace in Florence. The walls of these rooms are of the rough textured plaster so often used in old Italian buildings. The wood beamed ceiling has its heavy timbers illuminated in color, while the chimneypiece is almost an exact reproduction of one which has stood for centuries in one of the palace's principal rooms. Furniture used is largely patterned after Italian models, the addition of certain pieces, such as broad, low divans, being perhaps to add a note of friendly comfort to a public room which must be used by a large number of people. This note of Italian luxury and splendor, large scale and opulence of color, is carried even a step further in a mezzanine lounge which is part of the Harris Theater, where the walls are of stone, and the ceiling is groined or vaulted and then decorated in fresco. A theater demands treatment quite different from that given a building of almost any other kind. Its very purpose and function presuppose richness and luxury, and these qualities are rarely handled with the success which has been attained here.



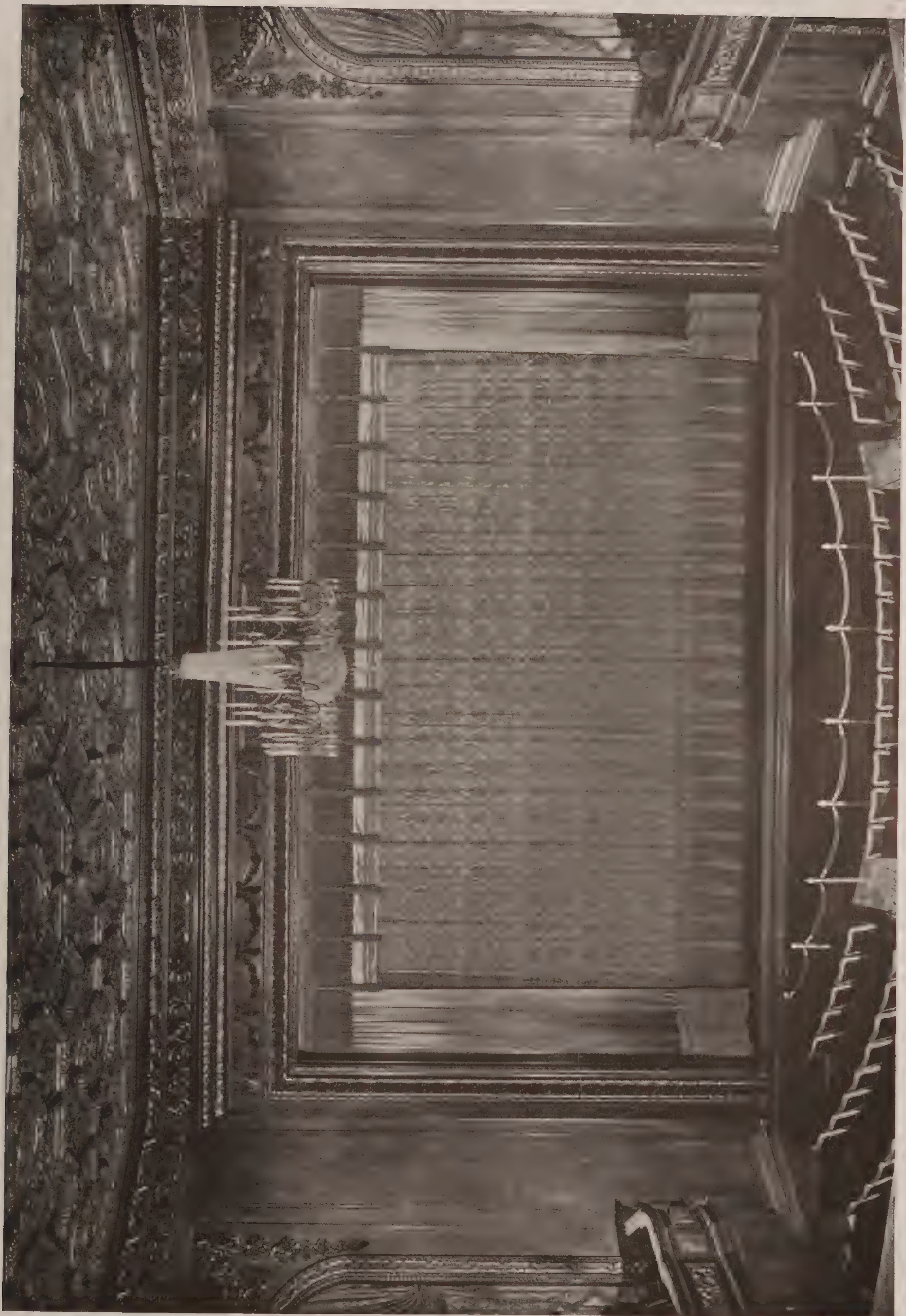
Main Lounge of Selwyn Theater, Chicago



Photos by Fowler

SELWYN THEATER, CHICAGO

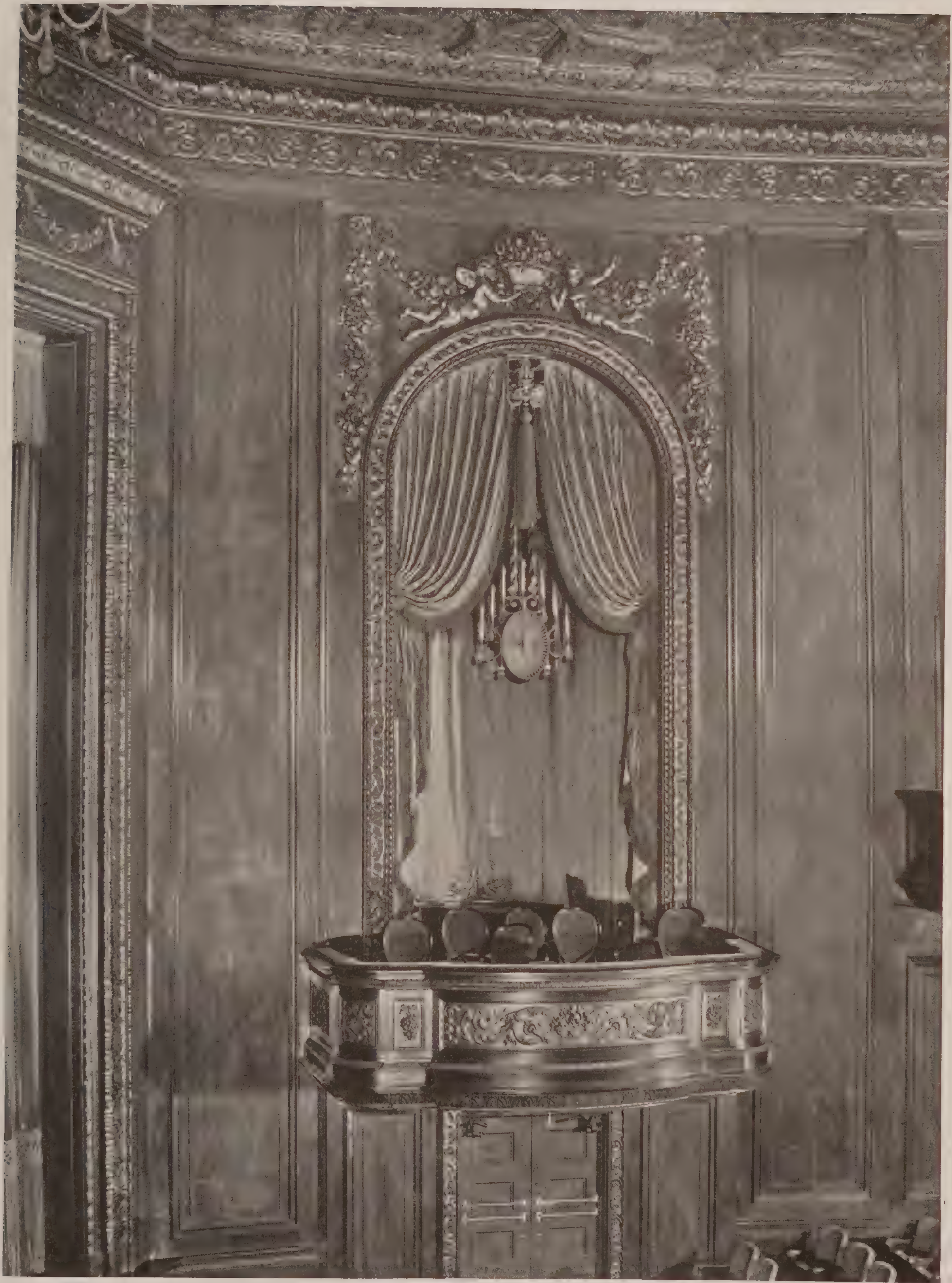
C HOWARD CRANE, KENNETH FRANZHEIM, ARCHITECTS



AUDITORIUM

SELWYN THEATER, CHICAGO

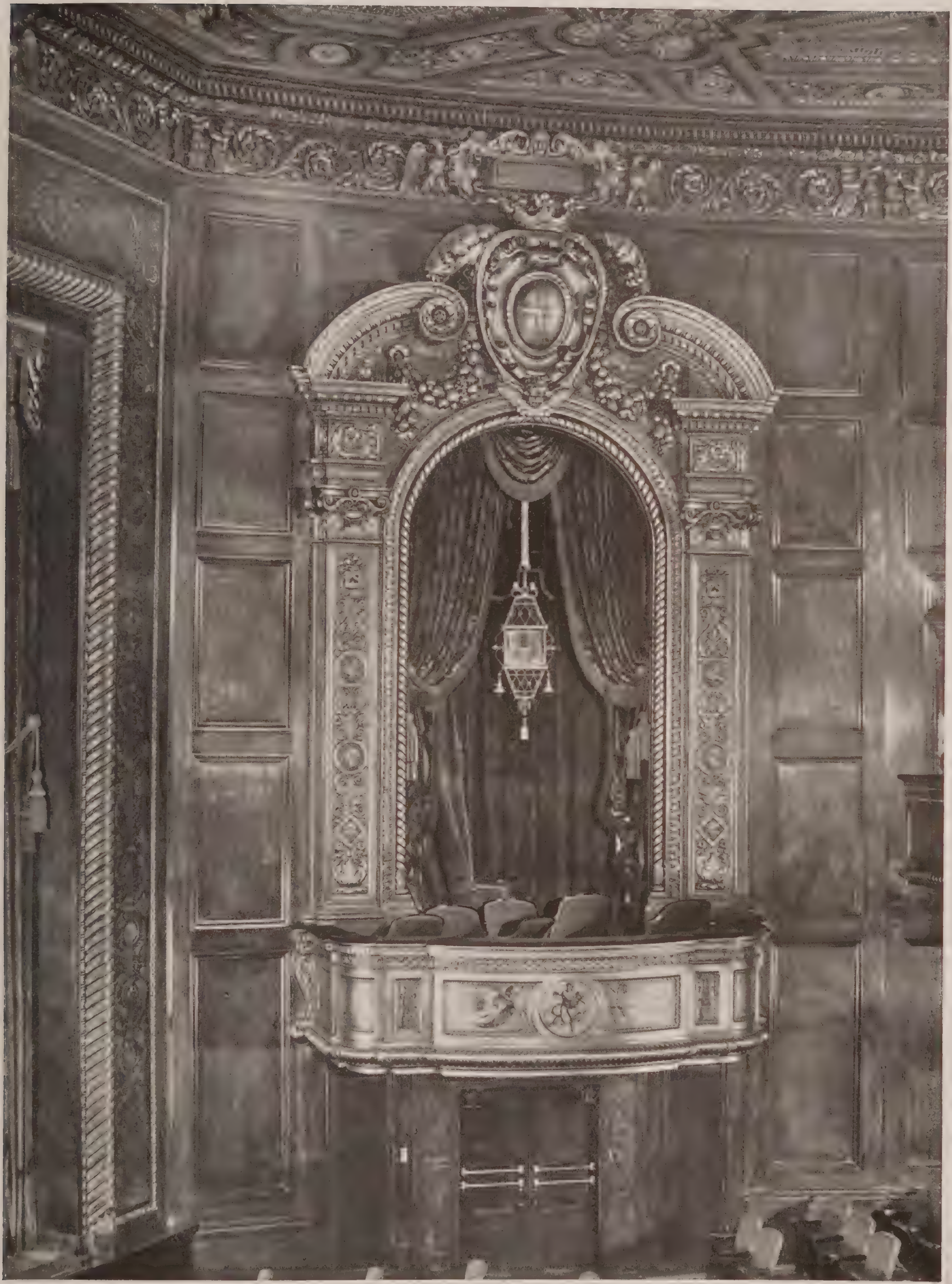
C. HOWARD CRANE, KENNETH FRANZHEIM, ARCHITECTS



DETAIL OF BOX

SELWYN THEATER, CHICAGO

C. HOWARD CRANE, KENNETH FRANZHEIM, ARCHITECTS



DETAIL OF BOX

HARRIS THEATER, CHICAGO

C. HOWARD CRANE, KENNETH FRANZHEIM, ARCHITECTS

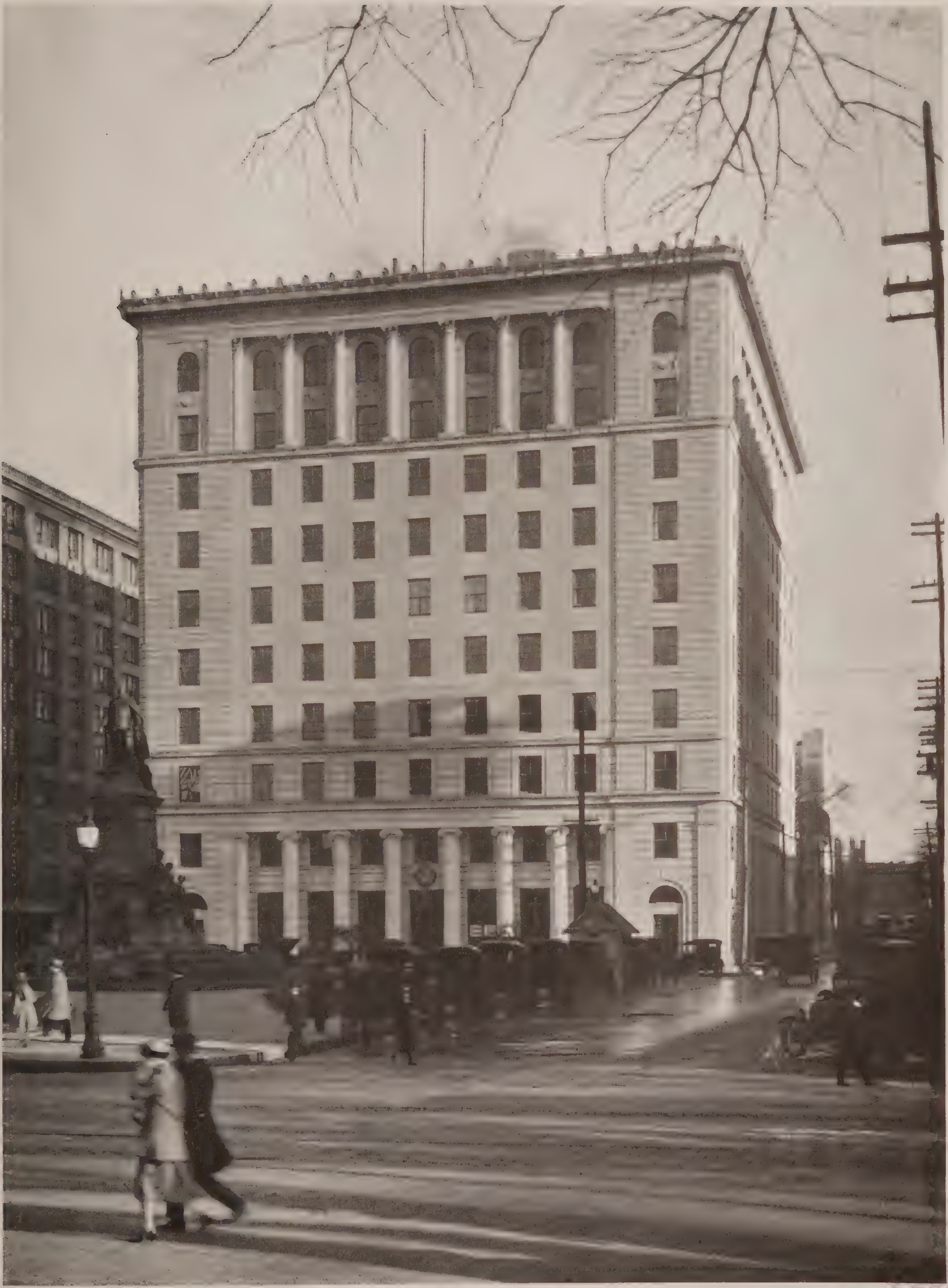
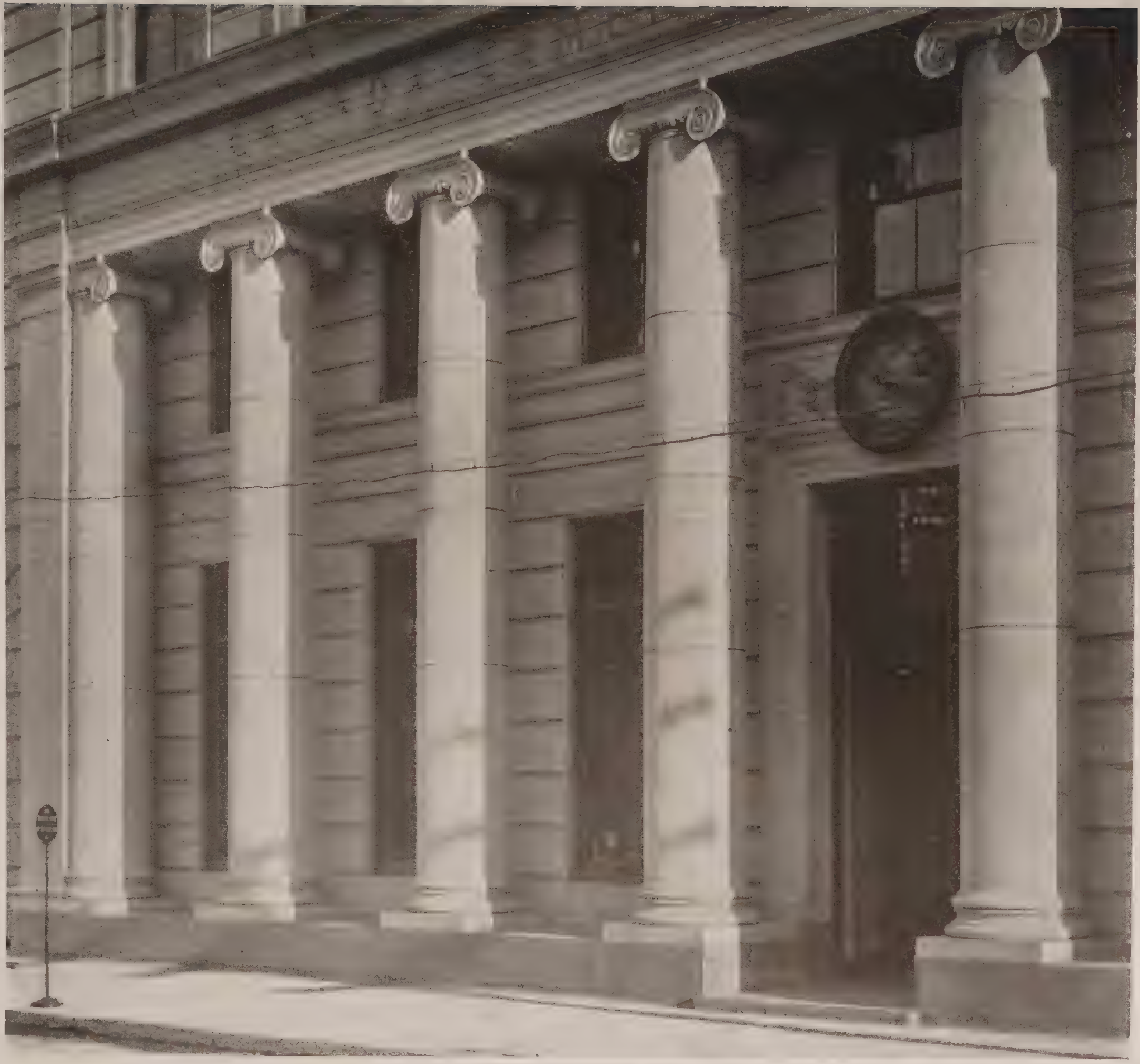


Photo by Charles H. Barnard

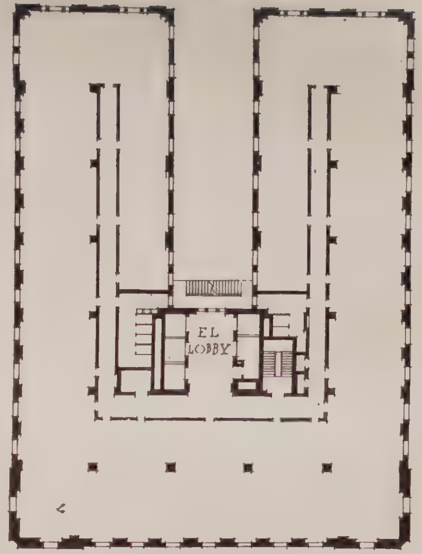
CANADA CEMENT COMPANY BUILDING, MONTREAL

BAROTT & BLACKADER, ARCHITECTS

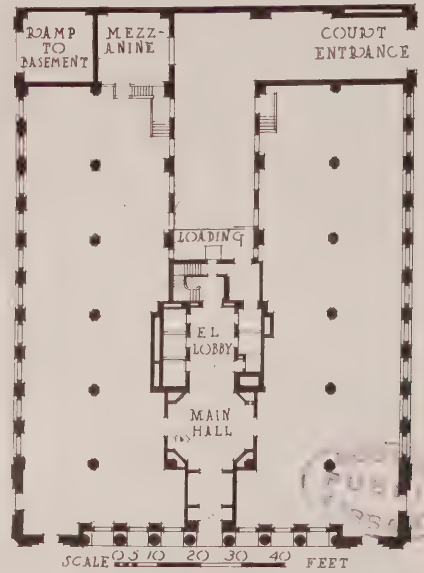
PUBLIC LIBRARY



DETAIL OF COLONNADE



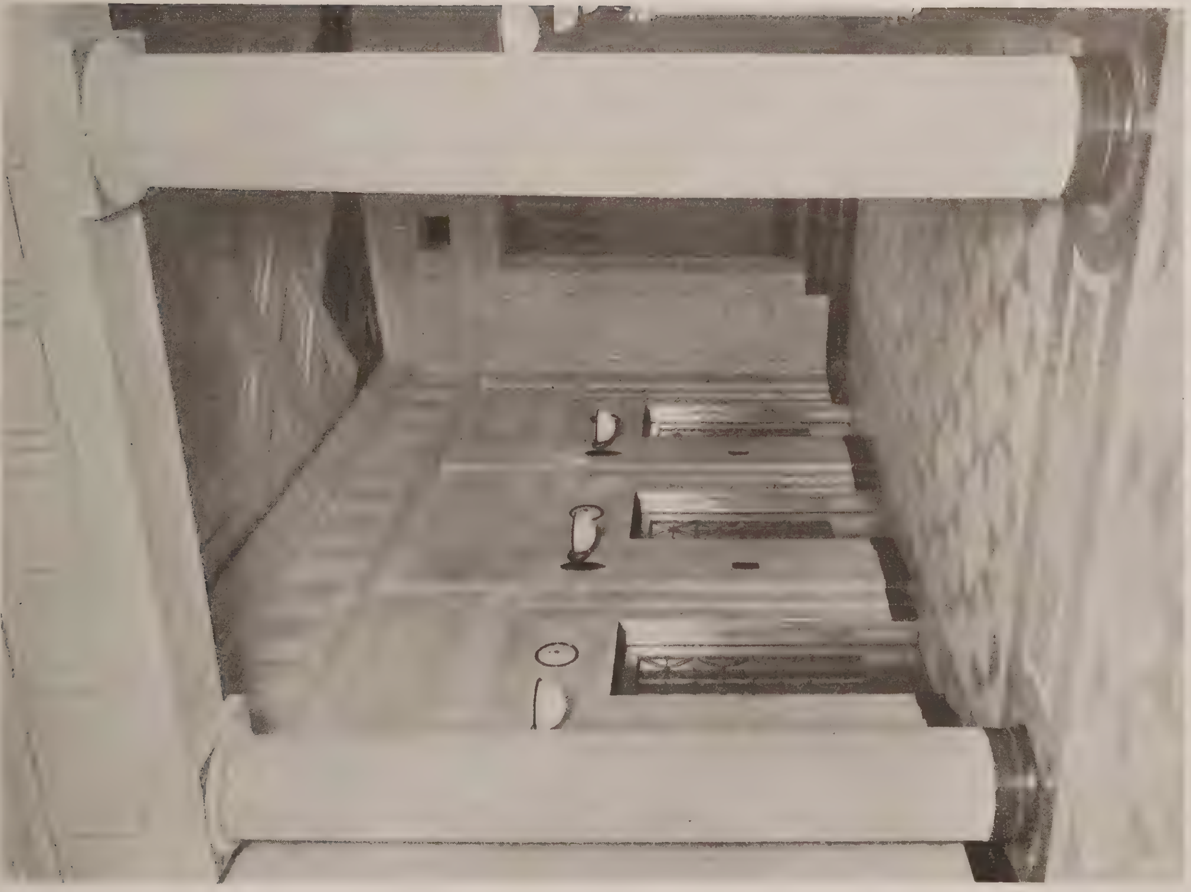
TYPICAL FLOOR PLAN



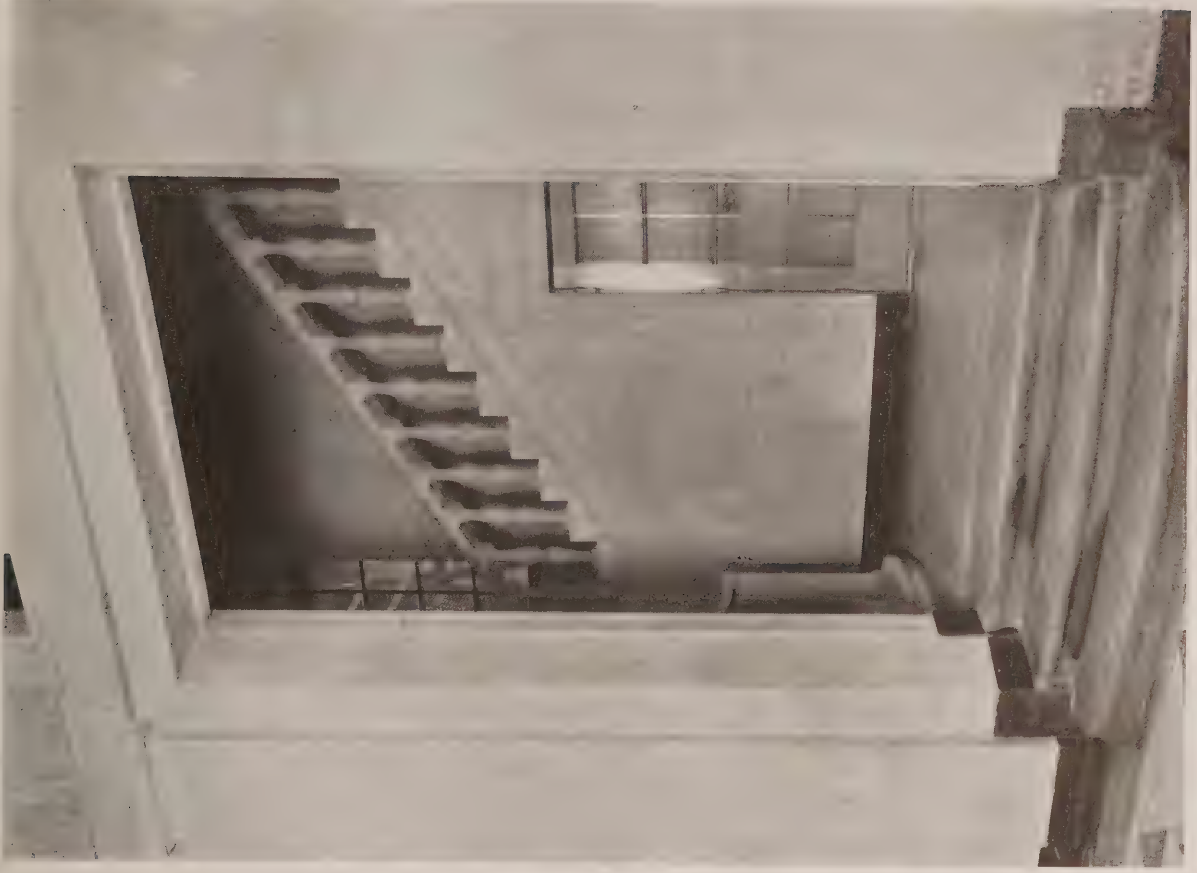
FIRST FLOOR PLAN

CANADA CEMENT COMPANY BUILDING, MONTREAL

BAROTT & BLACKADER, ARCHITECTS



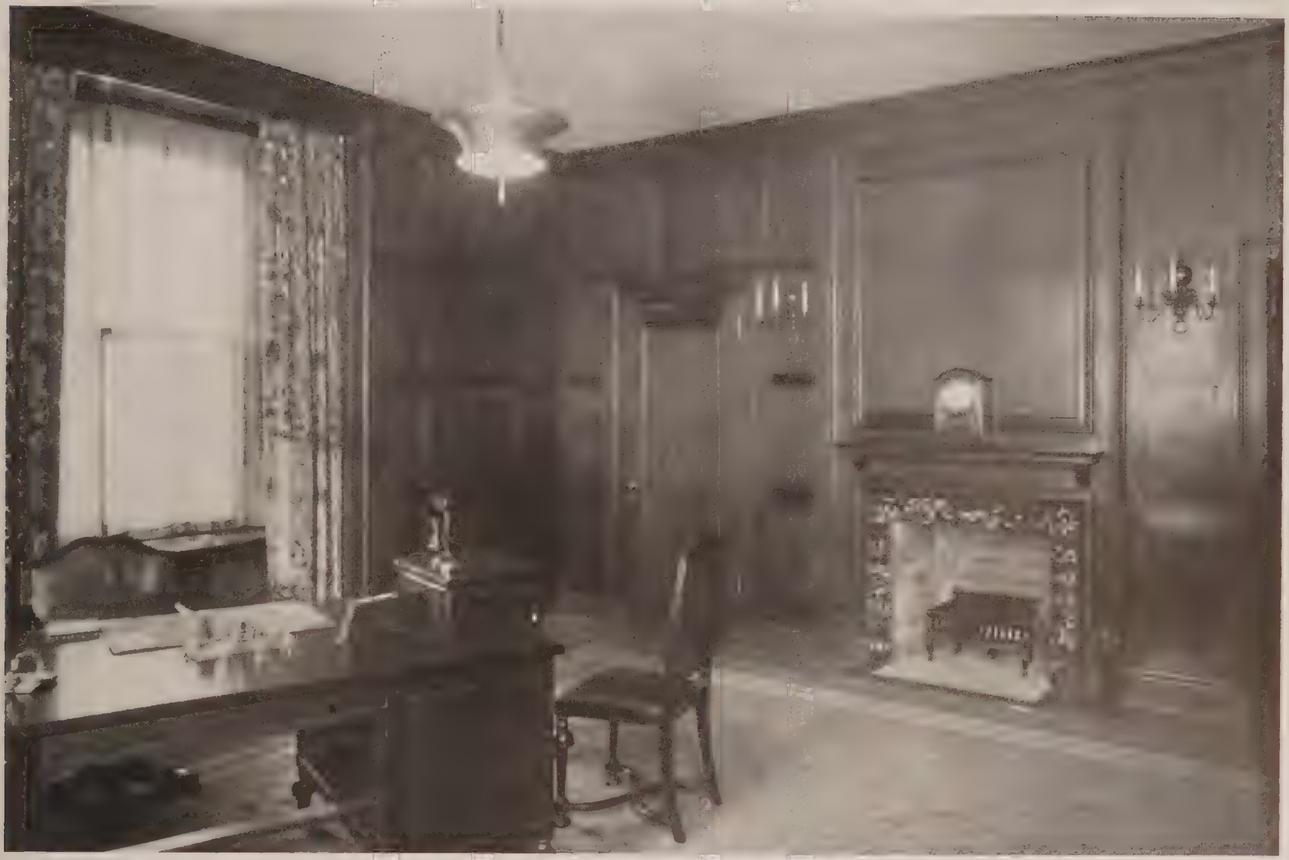
ELEVATOR LOBBY



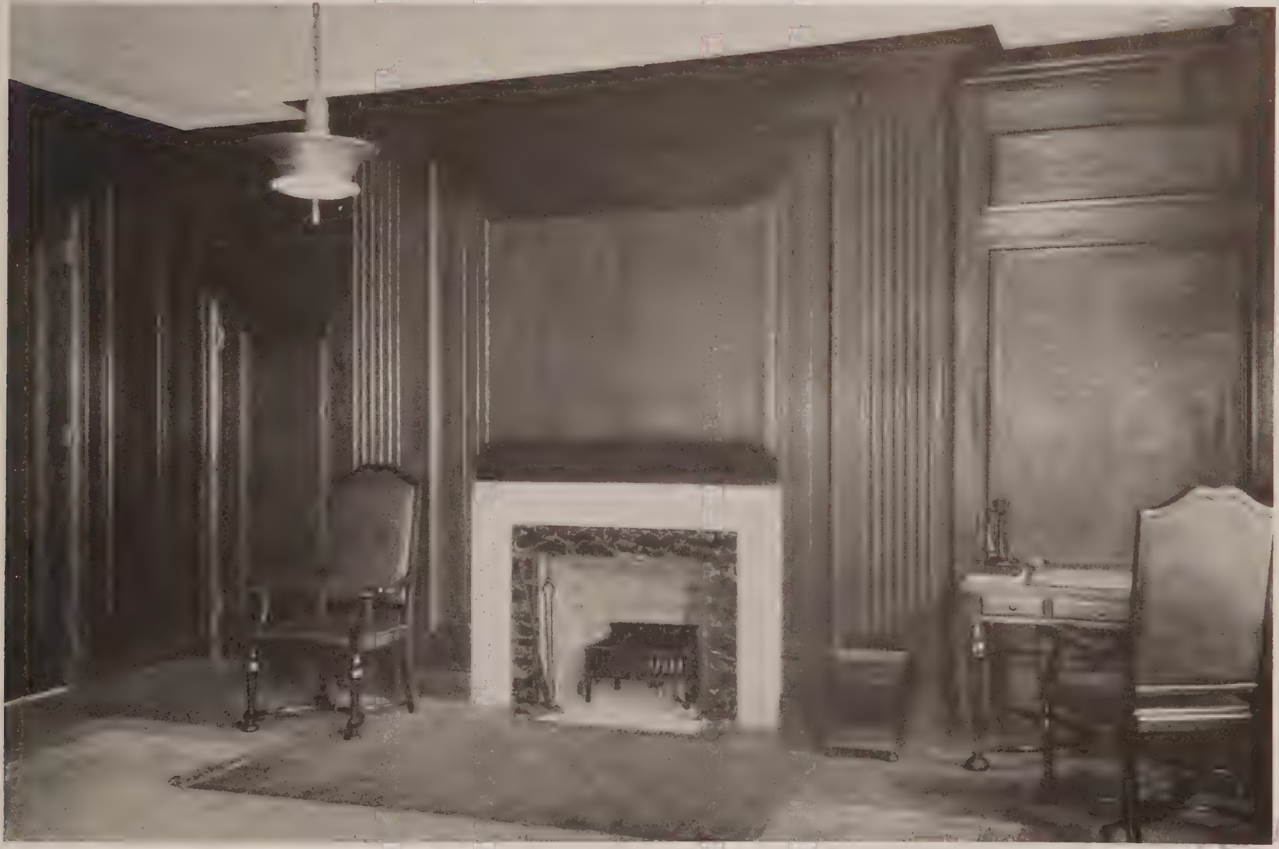
STAIRWAY

CANADA CEMENT COMPANY BUILDING, MONTREAL

BAROTT & BLACKADER, ARCHITECTS



PRIVATE OFFICE



Photos by Notman & Son

BOARD ROOM

CANADA CEMENT COMPANY BUILDING, MONTREAL

BAROTT & BLACKADER, ARCHITECTS

Canada Cement Company Building, Montreal

AN ARCHITECTURAL ACHIEVEMENT IN THE USE OF CEMENT PRODUCTS

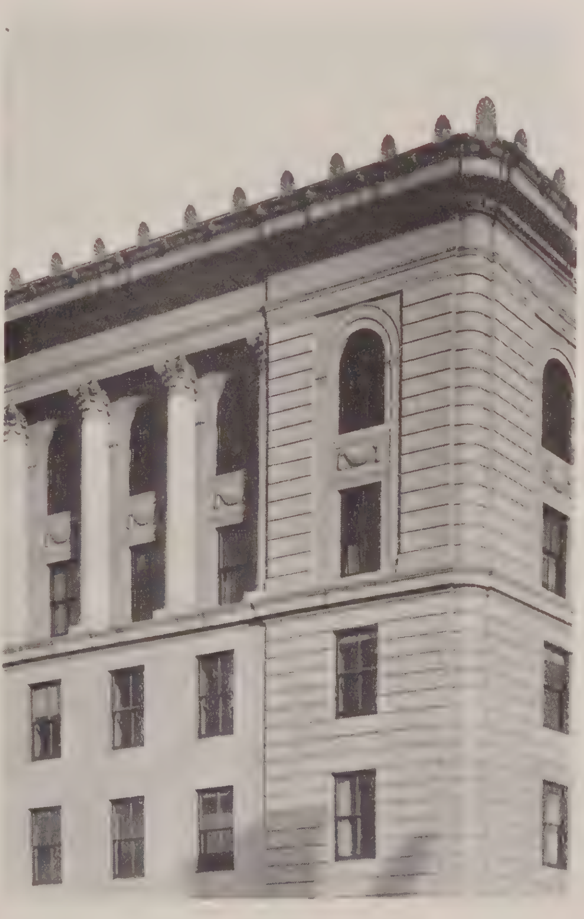
BAROTT & BLACKADER, ARCHITECTS

THE erection in many countries of tall buildings proves that their economic advantages have won for them a popularity which is destined to endure, and which has already changed the aspects and skylines of cities everywhere. Different cities in the Dominion of Canada have made wide use of steel construction, and in Montreal there are many structures which rank well as examples of what such buildings should be.

The dignified ten-story structure built by the Canada Cement Company is a striking instance of what may be done with a comparatively tall building, for it embodies designing and planning of a high order. It is also of special interest because cement in a wide variety of uses has been employed in every practical way in a building the owners of which were naturally interested in displaying the advantages of their product. The effort is entirely reasonable. No attempt has been made to use cement products where other materials would be more suitable or less costly. The structure is reinforced concrete, and the exterior facing is of cast cement.

The building occupies what is perhaps one of the most desirable locations in Montreal, an entire blockfront facing Phillips square, in the center of which stands the statue of King Edward VII. Streets upon each side of the building afford permanent natural light upon three sides. Provided thus with a distinguished setting, the building presents a highly architectural exterior, the two lower stories forming a base and recessed across the front to form a colonnade flanked at each end by a pylon. The base is rusticated, and this treatment has been continued up the corners of the building, the two upper stories being treated in a way which repeats the colonnade motif by the use of engaged columns which support a rather delicate cornice.

The main entrance to the building from Phillips square opens into an octagonal hall from which one passes into the lobby with its six elevators,—four passenger, one of the "push-button" type, and one for freight. Walls of entrance vestibule, main hall and elevator lobby are of artificial stone, floors of black and white marble, and the plastered ceilings, coffered in Italian renaissance style, are colored. Corridors above the ground floor are provided with cement floors and dadoes of gray marble with black marble trim and base. The bases of these upper floors are planned with spaces behind for laying of telephone or bell wires.


Detail of Upper Stories

In the cast cement facing of the exterior with its correct and semi-classical lines, the aggregate has been selected to give an effect similar to that of granite, and the ornament is hand tooled throughout. The columns of the colonnade across the front of the building, of the same material reinforced with steel, are used structurally and are not plastered on as mere ornament.

In addition to being used as exterior facing, for exterior and interior columns and for floors, cement has also been used for the roof, this building being one of the first in the Dominion to follow the modern tendency toward the complete use of concrete and reinforced concrete construction. The customary arbitrary method of using concrete, which prescribes the use of certain portions of cement, fine and coarse aggregates, was disregarded, and a study was made of such aggregates as are to be had in the vicinity of Montreal. The strength of the concrete required for different classes of work in the structure was specified. Consistency was regulated by "slump tests," and the compressive strength was checked by the test cylinders taken from the concrete as it was poured, the results agreeing comparably with the specifications. This is an improvement over the methods generally adopted where concrete is used, which assume a certain strength for given proportions, while the concrete which is actually obtained may differ considerably from that called for in the

General Office in Canada Cement Company's Quarters

specifications and figured on in designing the structure. Concrete designed for a compressive strength of 3,000 pounds was used for the columns, and 2,500-pound concrete was employed for the floors.

Heating in the building is of the vacuum type, and the system makes use of about 22,000 square feet of direct radiation. Everywhere throughout the structure the radiators are placed in front of the windows and a few inches lower than their sills. Excepting in the basement and the sub-basement all the pipes, including the branches and risers, are concealed in furred spaces. Supply pipes are protected by asbestos covered with canvas, return pipes being covered only where they pass through cold air spaces. In laying out the heating installation care was taken to have the system suitably valved in order that it could be sectionalized for necessary inspection and repairs.

Two water tube boilers of 175 h.p. capacity, designed for 160 pounds water pressure, are included in the installation, and a pit in the sub-basement and close to the smoke flue was provided for the boilers. Vacuum and feed pumps are in duplicate, and to make possible the installation of a steam and electrical plant, which the owners of the building may soon require, high pressure pumps were included and the boiler room, piping and auxiliaries were laid out with this in view so that in event of a generating plant's being installed the exhaust steam could be used for heating purposes. The water supply is under tank and street pressure. Upon the roof is a 1,500-gallon tank which is filled from automatically controlled booster pumps in the sub-basement. Water for the five upper floors is taken from this house tank, the lower floors being fed from the 45-pound main in the street, although if necessary the house tank can supply the entire building. Hot water is supplied from a low-pressure steam water jacket placed in the boiler room, equipped with a coal-fed jacket heater for use during the summer.

Electrical power and light are supplied by the public service companies at 200 volts, 2-phase, a transformer being provided in the basement. Light and power are distributed from the main switchboard which is placed in the engine room. The tenants' lighting is metered on their various panelboards. Conduits for the electrical wiring on different floors are laid directly in the concrete floor slabs, and a special conduit system is provided for the telephone and telegraph wires. Mechanical ventilation is provided only for the boiler room, which is supplied with fresh air by a fan. The building contains about 3,000,000 cubic feet and cost approximately 49 cents per foot, not counting architects' fees.

Wood Paneled Directors' Room

Domestic Architecture by Miller & Reeves

ILLUSTRATED FROM RECENT WORK AT COLUMBUS, OHIO

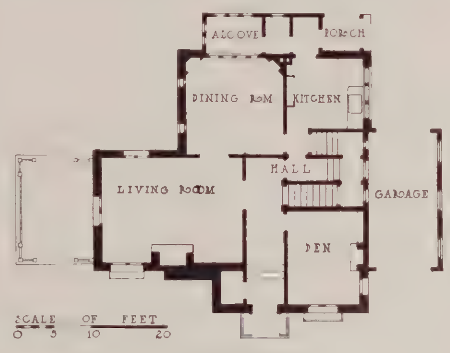
By WILLIAM DWIGHT SMITH

ANYONE who follows the progress of American domestic architecture as it is recorded year after year in the journals which serve the architectural field, and in publications of somewhat broader scope which cover the fields of building and furnishing, will realize the extent to which excellent domestic work is being done in every section of the country. Much of this work is due to architects of what might be called the younger school, men who have been trained in the offices of older architects and now entered upon careers of their own. The work of these younger men shows that a firm grasp is had upon the American country or suburban home and its problems, and quite a variety of types are being handled with success which means much for the future of American architecture.

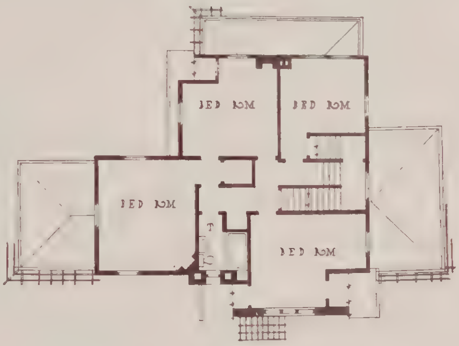
Any review of the work of comparatively young organizations may rightly include that of Miller & Reeves of Columbus, Ohio. By reason of strict devotion to architectural ideals, such as simplicity, sincerity, logical design and economy, their work has done much to cultivate a none too fertile field in the middle west.

As is so often the case, the leaven of their influence has worked first in rapidly growing suburban subdivisions, where new capital and young families seek investment and domicile. The temptations are so strong in such work, to cater to fads and whims, to sacrifice simplicity and sound construction for temporary investment and display, that only steadfast adherence to first principles can prevent ultimate artistic failure.

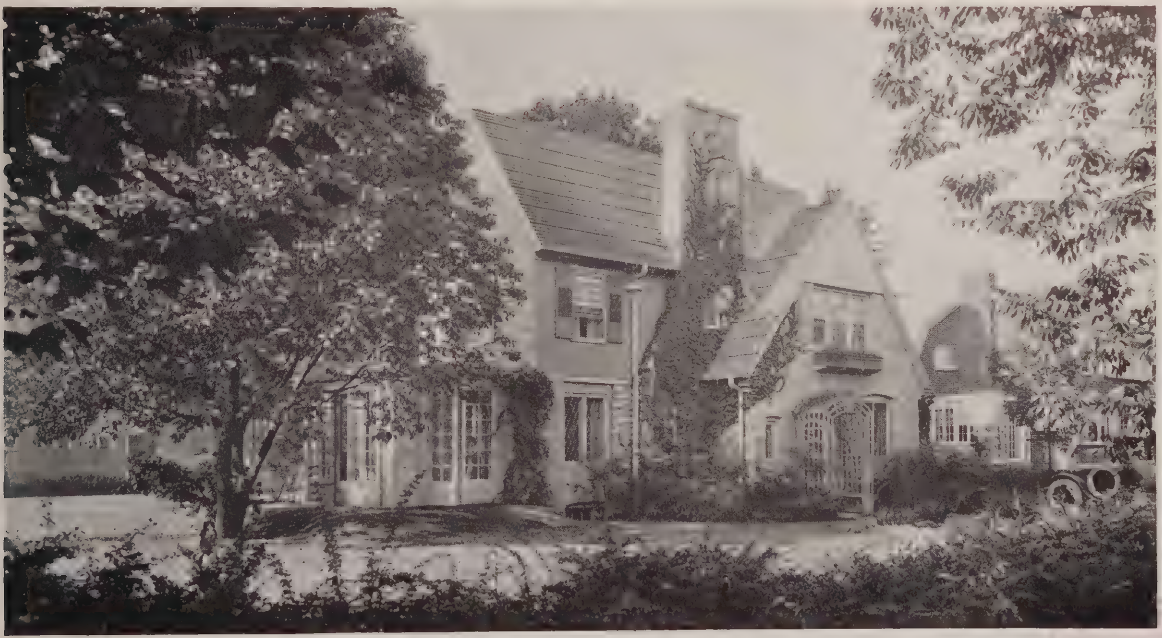
Regardless of the particular style which Miller & Reeves choose for the exterior dress of their compositions, they seem to indulge in none of the flashiness which is all too common in much recent domestic work. In the choice of this dress their work shows eclecticism to a marked degree. In the process of "finding" themselves they have used interpretations of several different styles with uniform good taste in handling. In their small work, such as the houses in Bexley Park and in the Drexel avenue group, which includes the Fuller, Coleman and Matchneer



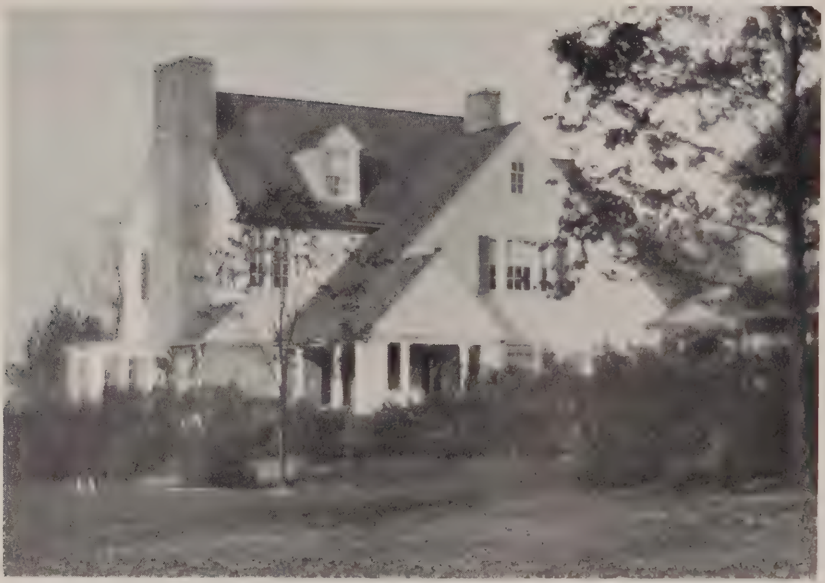
First Floor Plan



Second Floor Plan



Exterior and Plans, House of O. C. Miller, Esq., Bexley Park, Columbus, Ohio
Miller & Reeves, Architects



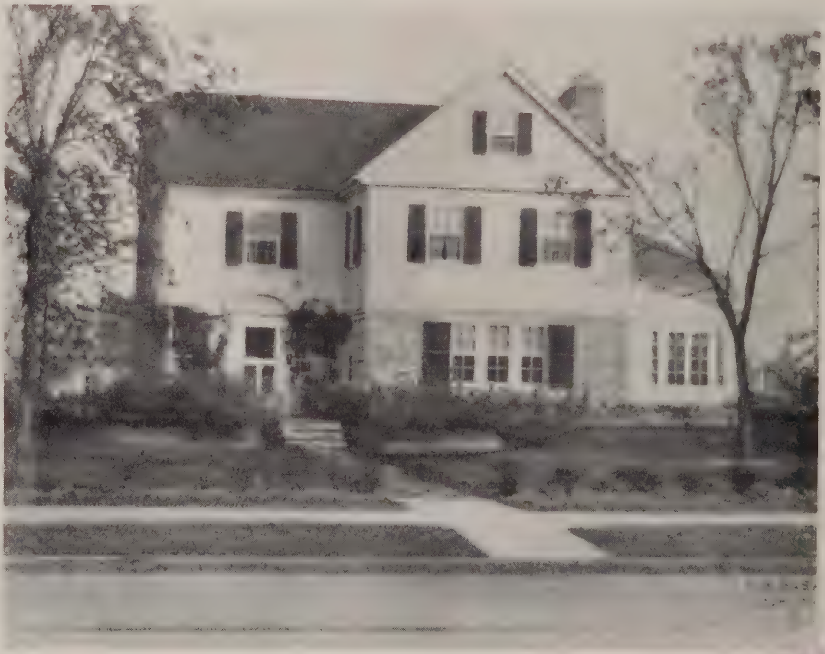
House of G. L. Fuller, Esq., in Drexel Avenue Group

residences, their success depends primarily upon simplicity and dignity of mass, but this is enhanced by interesting diversity of detail which usually looks to well established colonial forms for inspiration. With the concentration of architectural interest about a main entrance there is justification for the use of somewhat intricate detail. For economy of construction and execution of detail, as well as for a certain sentimental charm given by its old fashioned "country carpenter" character, the early American architecture has much to commend it for use in our residential work. In addition to the Fuller residence, the Myers house shows the influence of the Pennsylvania prototypes in sturdiness and in simple irregularity rather than in any direct copying. Much of the picturesqueness of some of our early American examples may be traced to the accidents of alterations and additions. The deliberate incorporating of such picturesqueness into new compositions is only justifiable when the results obtained are eminently pleasing and not illogical as to plan arrangement.

The three largest examples of the work of Miller & Reeves shown on these pages exhibit the influence of three different styles. Of their work in colonial character the residence of Mrs. Harry W. Brown is perhaps the largest. Its plan arrangement is largely determined by its location on an eminence overlooking a valley to the south and west with a view across to the golf course of the Columbus Country Club. The problem of providing maximum of porch area, often difficult in colonial work, has been handled here by the simple expedient of including the porch on the south end of the house, within the mass of the building itself. This permits the placing of the long one-story porch on the middle of the west facade, where it serves both the living room and dining room. The boldness of the entrance feature is quite in keeping with the simple mass of the building itself. This is accompanied by a commendable restraint in the use of detail, which is as effective as it is economical.

The second of the larger houses shown here is of the Italian villa type, the residence for Judge Robert P. Duncan (plates 15, 16.). The plan and exterior of the main portion of the house are severely symmetrical, as in the larger prototypes. We have come to think of much of the larger Italian work as being designed from the outside first,

Approach to Entrance, House of G. L. Fuller, Esq.



House of W. W. Matchneer, Esq., in Drexel Avenue Group where irregularities and inconveniences of interior arrangement may be winked at when the greater purpose of exact exterior symmetry is served. Extensive publication of work of the smaller villa types during recent years, however, has made more widespread the influence of the informal and the asymmetrical Italian work. In the Duncan residence the service departments, such as kitchen, servants' quarters, garage and the like, are appended to the main composition in a fashion entirely compatible with the style. This rambling appendage adds a certain picturesqueness which even a questionable change of scale does not mar.

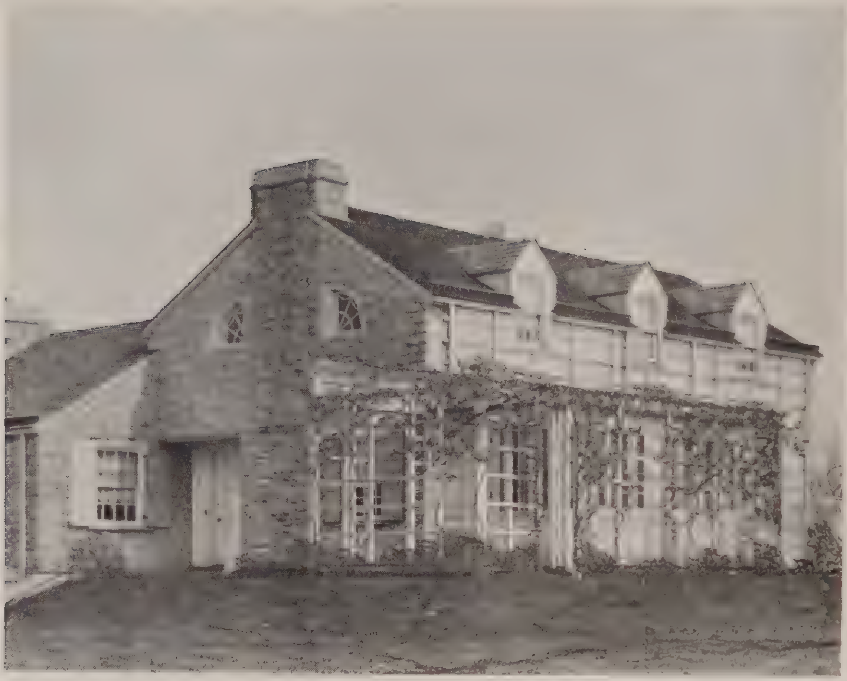
The second of this group of large residences, that of H. B. Halliday, shows but little of the influence of classic traditions which is evident in the Brown residence. The informal asymmetrical creations of modern English work, typified best perhaps by the prolific work of E. L. Lutyens, give wonderful opportunity for such irregular fenestration and arrangement of voids and solids as may be best suited to requirements of interior plan and convenience. In this feature the style is, of course, quite unlike that which inspired the Brown residence, both in plan and in exterior treatment. In the Halliday residence the "library" of Lutyens is fairly well used up,—what with stone and stucco, bays and dormers, small paned windows and leadings, stone coped gables and stiff sweeping rakes. The rough slate roof, so effective in much contemporary work of this character, is missed in this example.

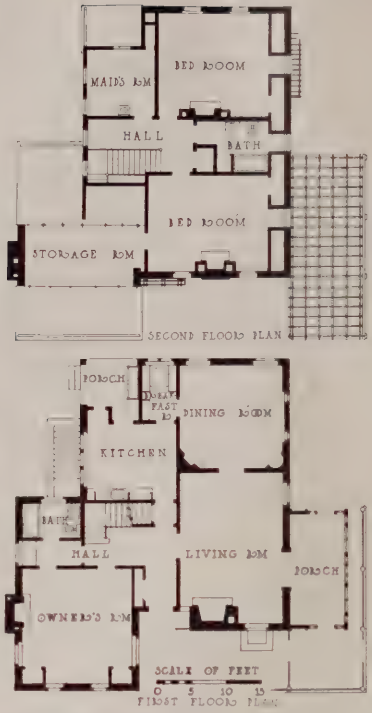
The Halliday plan takes advantage, to a certain degree, of the possibilities of domestic privacy which irregularity often offers. Our English contemporaries have a way of developing an irregular plan so as to foster privacy in domestic affairs and still avoid a forbidding coldness to the casual visitor. This is usually accomplished by a studied arrangement of the principal living apartments so as to have only remote or obscure contact with the main entrance and recep-

House of F. A. Lichtenberg, Esq., in a Group of Houses in Bexley Park

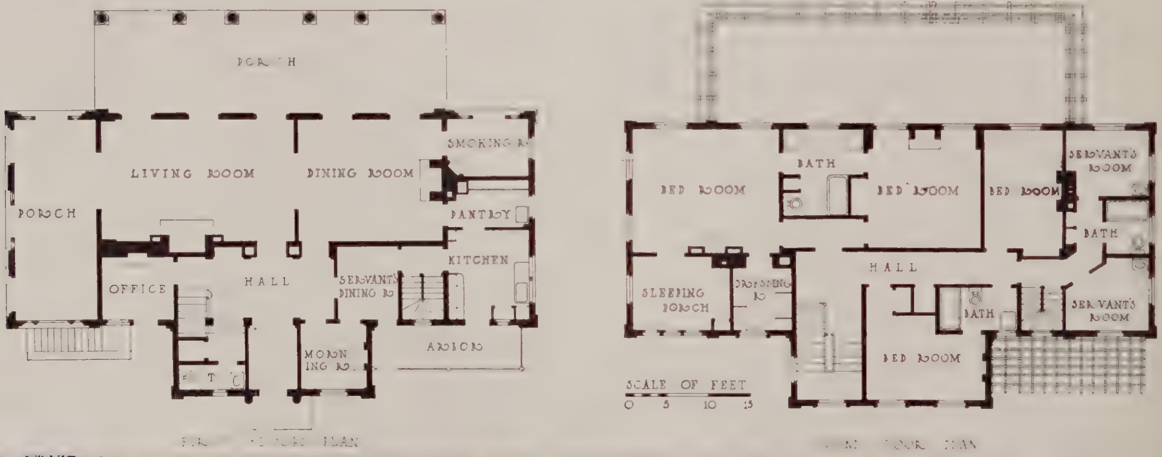
House of H. B. Coleman, Esq., in Drexel Avenue Group

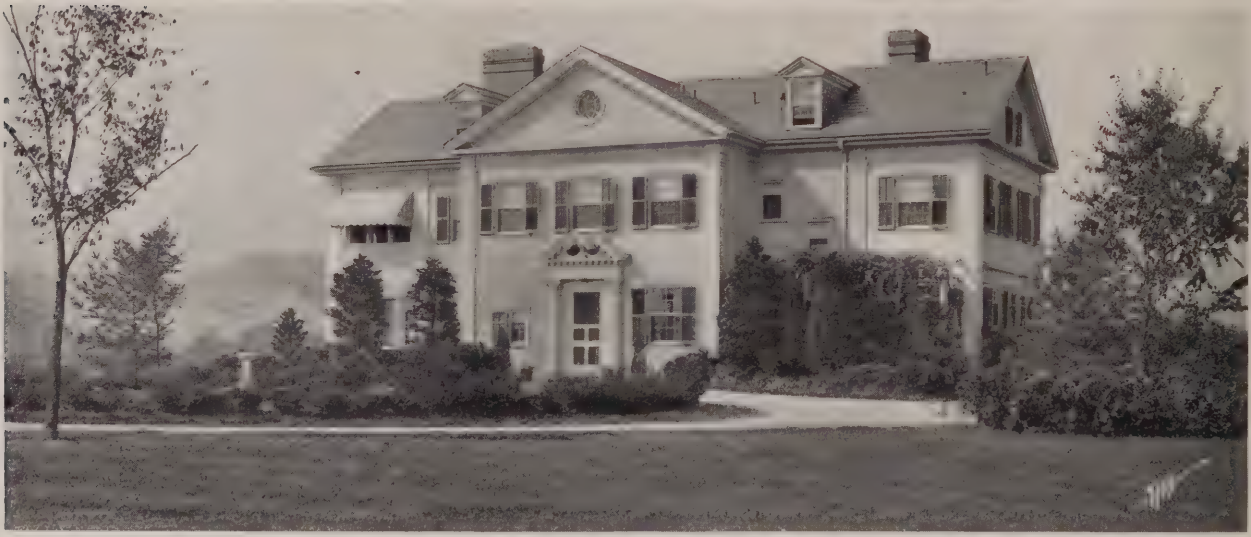
Group of Houses in Drexel Avenue, Bexley Park, Columbus, Ohio
Miller & Reeves, Architects





EXTERIOR AND FLOOR PLANS, HOUSE OF MRS. C. F. MYERS AT BEXLEY PARK

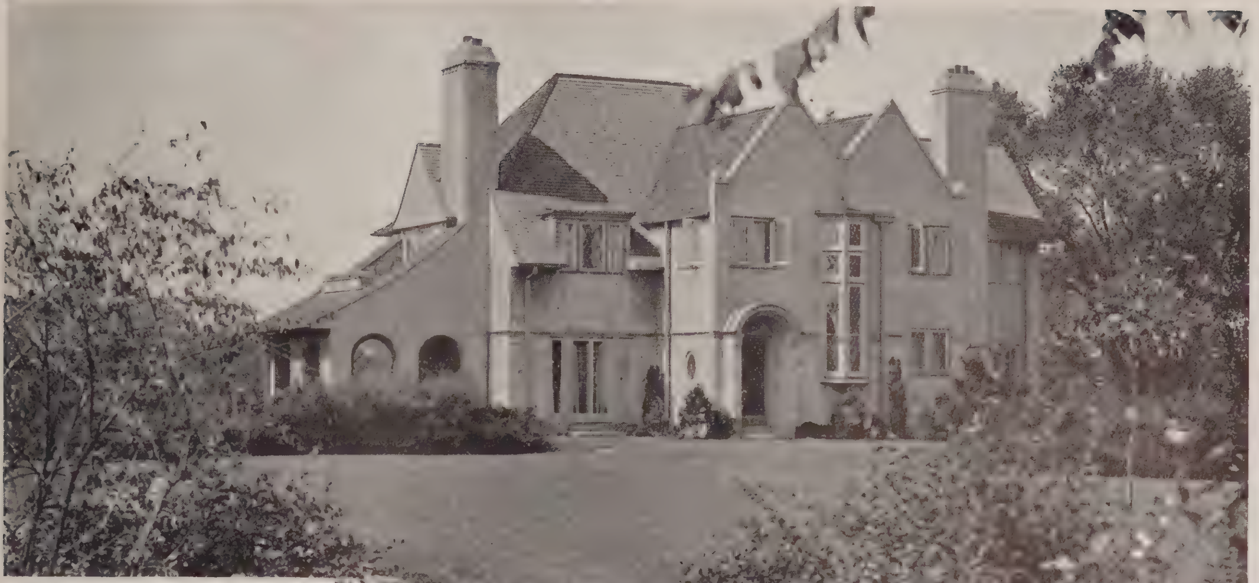


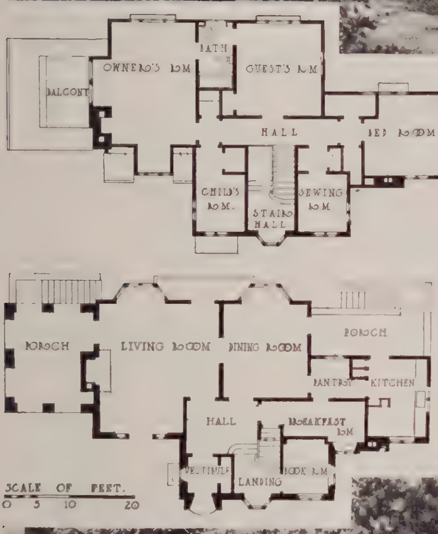


EXTERIOR AND FLOOR PLANS, HOUSE OF MRS. HARRY W. BROWN

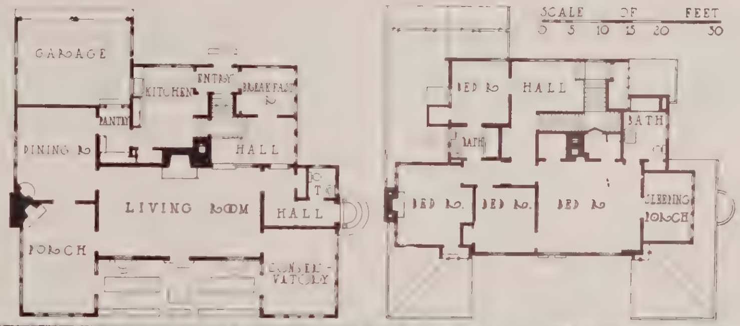
TWO HOUSES AT COLUMBUS, OHIO

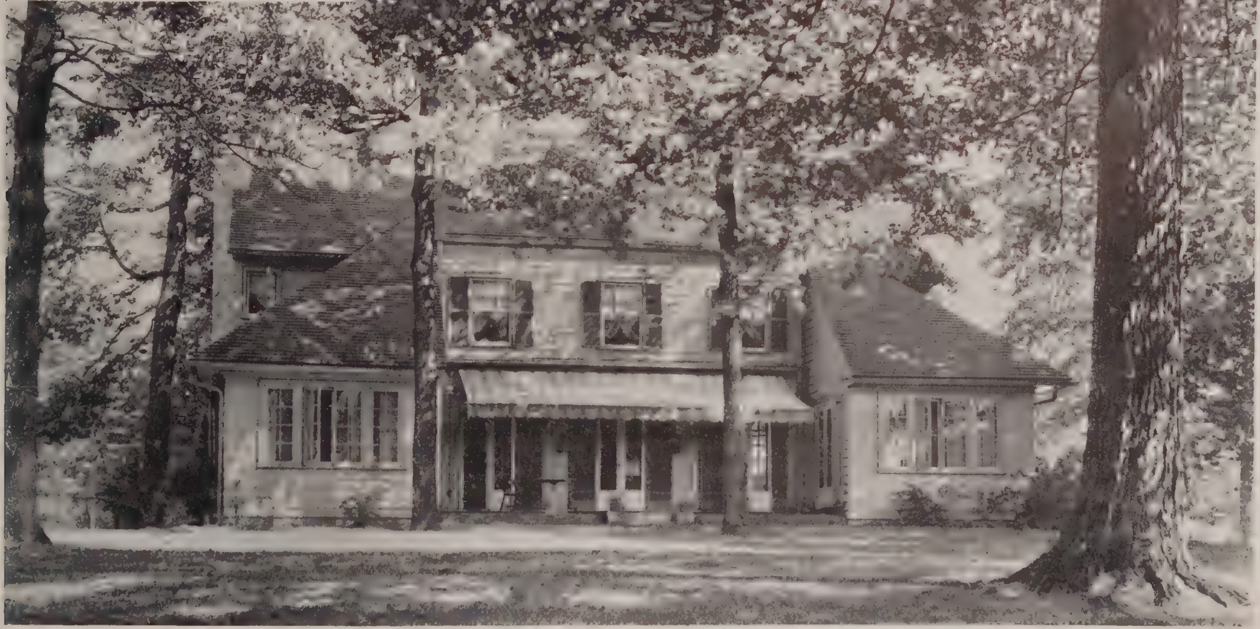
MILLER & REEVES, ARCHITECTS





EXTERIOR AND FLOOR PLANS (AT LEFT) OF HOUSE OF H. B. HALLIDAY, ESQ.





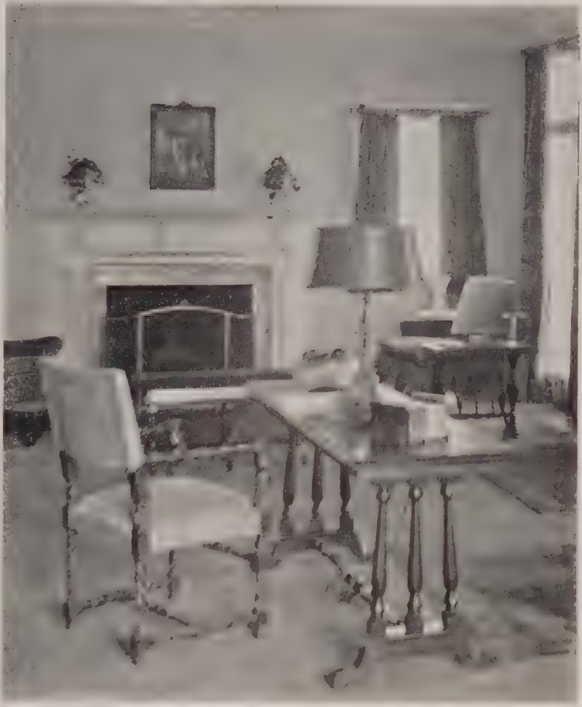
GARDEN SIDE AND FLOOR PLANS (ABOVE), HOUSE OF W. D. FULTON, JR., ESQ.

TWO HOUSES AT BEXLEY PARK, COLUMBUS, OHIO

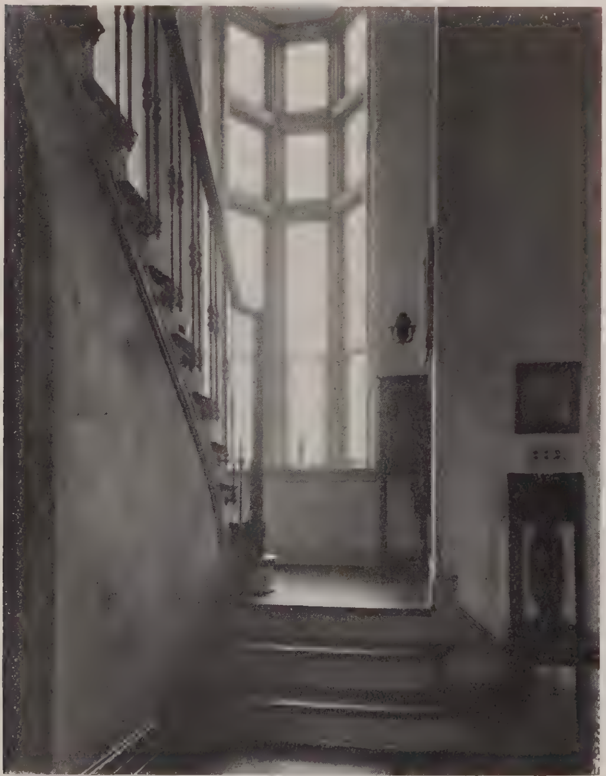
MILLER & REEVES, ARCHITECTS

tion room. That lesson seems hard for us to learn in America. Possibly we do not want to learn it. Perhaps we, of the urban middle west particularly, do not want to give up our front porch architecture where space is provided for us to sit Sunday afternoons to see and be seen. It does seem, however, that the similarity of living conditions in England and America should lead us to take advantage of their longer years of experience and benefit by their lessons in planning.

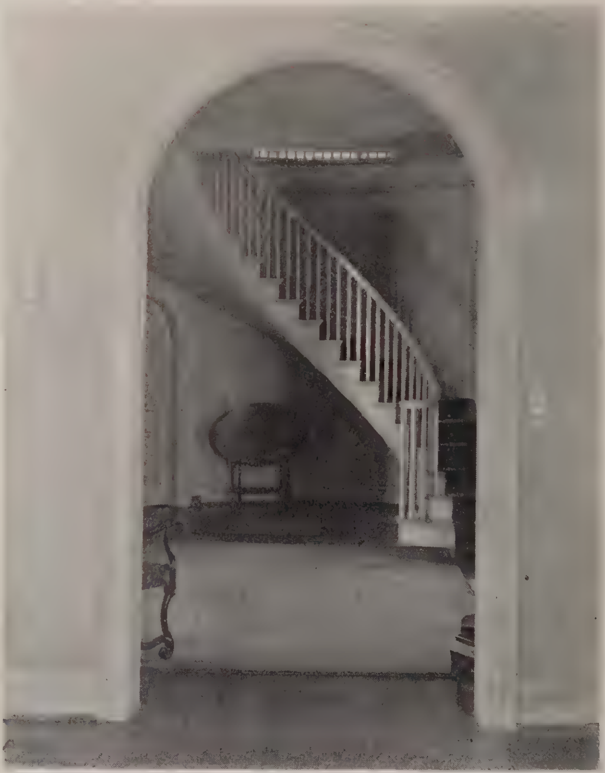
The increasingly high standards of living in America have made the architects' problems more numerous. The architects of comparatively small practice have greater opportunities for service because thereof. The successful solution of the domestic architectural problems of a community creates a confidence among a satisfied clientele which widens the field of service. In the case of Miller & Reeves, their five years of practice have now placed upon them wider responsibilities in the community. While their standing is largely based upon residential work, they now have to their credit a number of commercial and ecclesiastical commissions. As one looks over the illustrations of the work of this firm which are given here it will readily be seen that to obtain pleasing and interesting exteriors it is by no means necessary to cater to a craze for specious quaintness or picturesqueness which in some quarters seems to afflict architects or possibly the clients for whom they are planning. These architects seem to have discovered the means of solving the problem of residence design in what is after all the only logical way—of first forming a plan suited to the needs of the family for which the house is built, then making the exterior conform to the plan, depending upon straightforward treatment, good proportions and use of appropriate materials to secure the interest and expression to which any building is entitled. Their work is typical of that of a growing group.



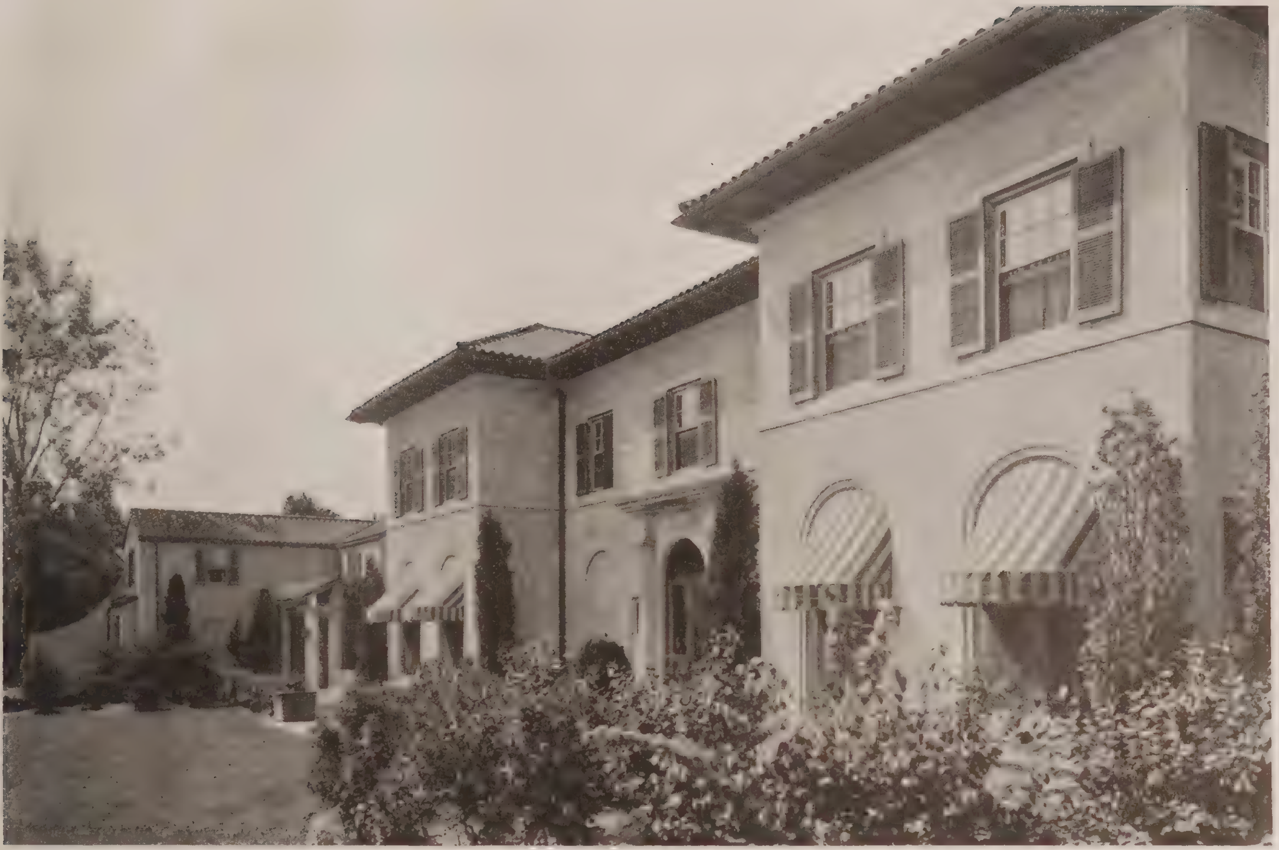
Typical Living Room in Bexley Park House



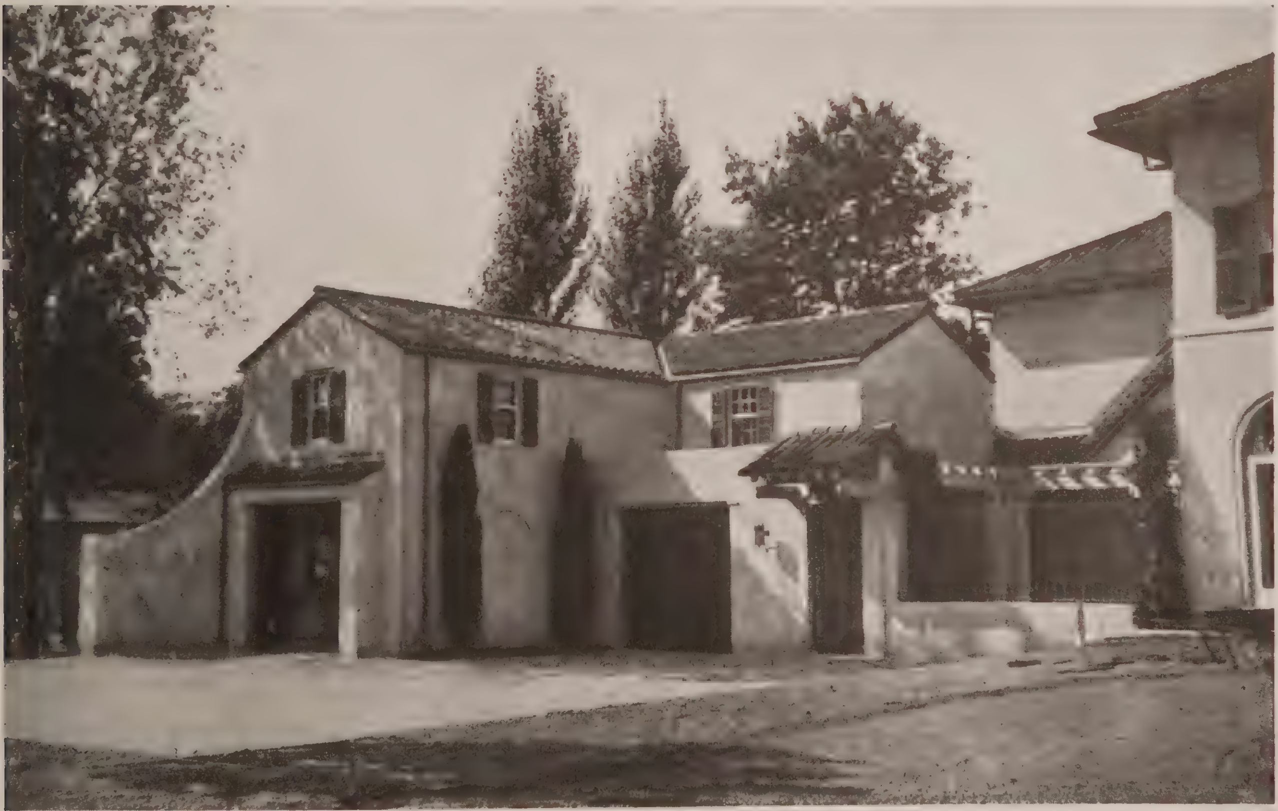
Stair Hall Detail in Halliday House



Stair Hall Detail in Bexley Park House



DETAIL OF ENTRANCE FRONT

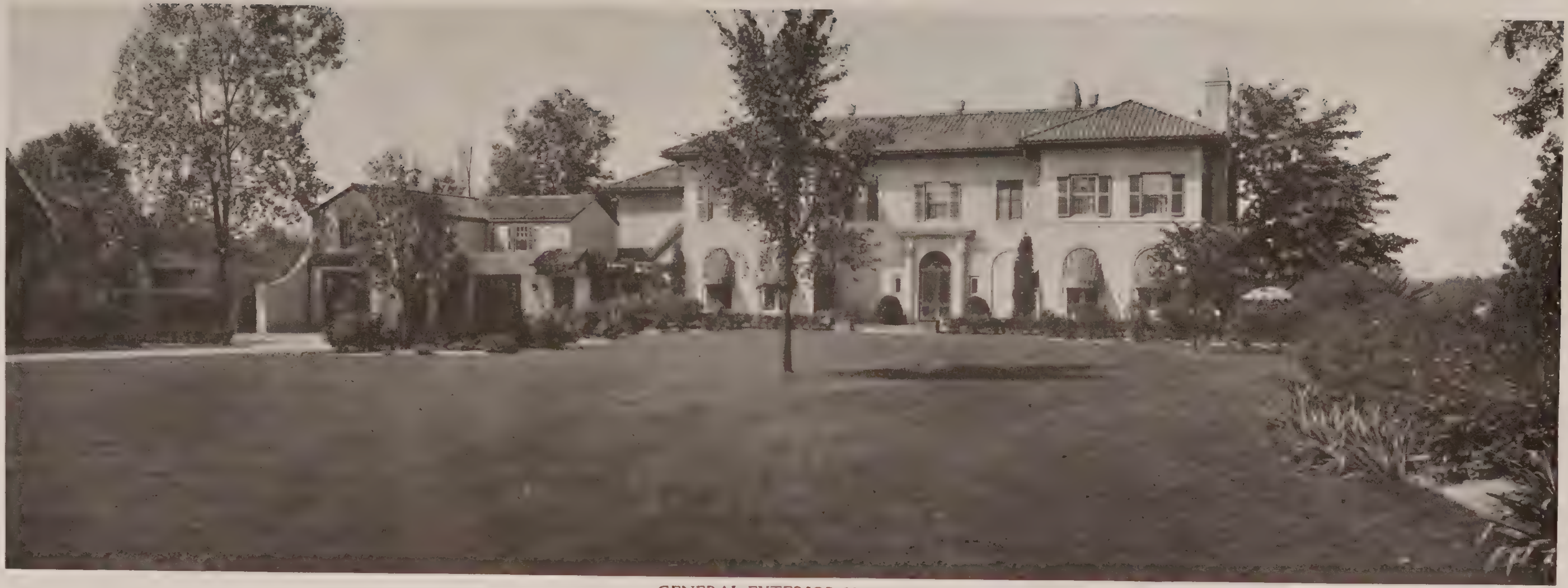


Photos by F. H. Haskett

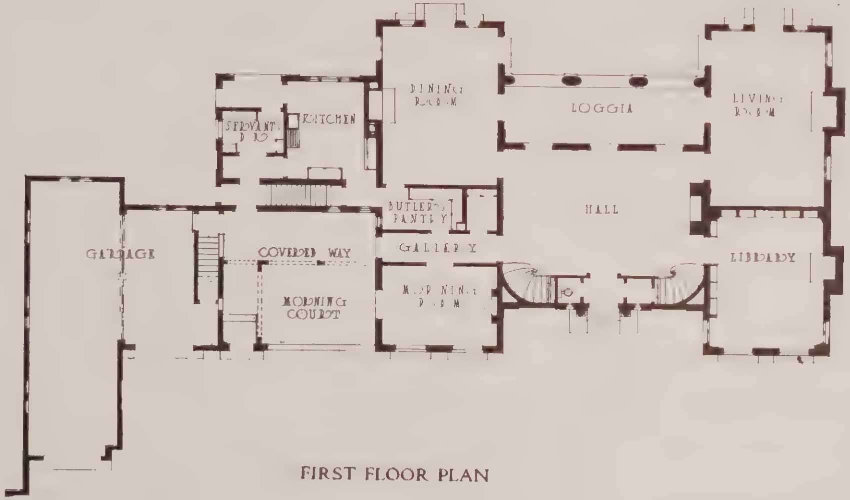
DETAIL OF SERVICE WING

HOUSE OF ROBERT P. DUNCAN, ESQ., BEXLEY PARK, COLUMBUS, OHIO

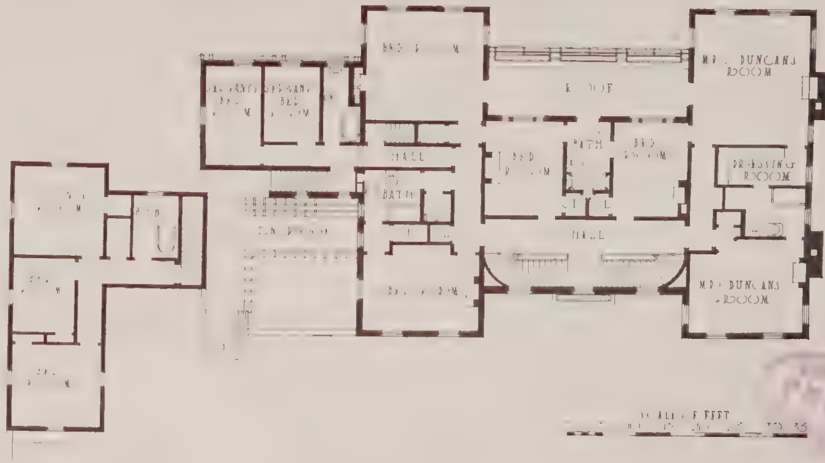
MILLER & REEVES, ARCHITECTS



GENERAL EXTERIOR VIEW



FIRST FLOOR PLAN



SECOND FLOOR PLAN

HOUSE OF ROBERT P. DUNCAN, ESQ., BEXLEY PARK, COLUMBUS, OHIO

MILLER & REEVES, ARCHITECTS

ENGINEERING DEPARTMENT

Charles A. Whittemore, *Associate Editor*

Granolithic Finish

By E. F. ROCKWOOD

IN January, 1921, a committee of the American Concrete Institute prepared a report on, and specifications for, granolithic finish. Using this report as a basis, these specifications for cement floors are suggested.

A. Types of Floor Finish

1. *Monolithic Granolithic.* In this type of finish a topping about ½ inch thick of cement and fine aggregate is spread over the concrete slab immediately after it has been laid and screeded off. This topping is then floated and troweled.

2. *Granolithic.* For a floor of this type a topping of from ¾ inch to 2 inches thick of cement and fine aggregate is laid on the concrete slab after it has set. This topping is then floated and troweled.

There are two methods of laying granolithic floors, viz., laying them with the base concrete and laying them after the base concrete has set. The first, or monolithic, method has an advantage in that the finish so laid forms a part of the structural slab and gives a thinner and lighter construction. Its disadvantage is that it is hard to protect it against bad weather and against the wear and damage resulting from premature use. The second method has the advantage that the finish is not laid until the building has been closed in, when the finish can be protected against weather and premature use. It has long been thought that a finish laid in this manner would not bond to the base concrete, but if the directions given in this article are followed, a perfect bond will result. This method gives a thicker and slightly more expensive floor, but its wearing qualities are well worth the increase in cost. The American Concrete Institute's report claims that by keeping all traffic off a granolithic floor for 10 days after it is laid its wearing qualities will be increased 50 per cent. It is almost impossible to obtain this protection with monolithic granolithic. It is therefore recommended that for the best results ¾ inch to 1 inch of granolithic be laid on the concrete slab after it has hardened and the building has been enclosed.

B. Materials

1. Cement shall be a standard brand of American Portland cement, conforming to the latest specifications of the A.S.T.M.

2. Sand shall be clean, sharp and thus graded by actual screening:

100 per cent shall pass a ½-inch mesh screen.
Not more than 10 per cent shall pass a 50-mesh screen; not more than 2 per cent a 100-mesh screen.

The sand should be of such a quality that mortar composed of one part Portland cement and three parts sand by weight shall show a tensile strength equal to that of mortar made in the same proportions with the same cement and standard Ottawa sand.

3. Coarse aggregate shall consist of crushed or screened gravel, crushed granite, or trap rock which will pass a ½-inch screen and be retained on a $\frac{3}{16}$-inch screen.

C. Mixing and Placing

Granolithic shall be mixed in the proportion of one part cement to ¾ part sand and one part coarse aggregate as already specified. The American Concrete Institute reports that the use of iron filings or any other specially advertised brand of hard aggregates improves the wearing qualities of the floor only to the extent that they are retained upon or near the finished surface. The writer's own experience with iron filings leads him to believe that they may even be detrimental to the finish, due to their rusting which may loosen the surrounding particles of cement and sand. As rapid wear results not from the materials' wearing away, but from their loosening, the wearing qualities of a floor depend more on the way it is bound together than on the hardness of the materials in it.

In general, all granolithic should be machine-mixed. Hand-mixed granolithic should not be used excepting with the express consent of the architect. Mixing should be thorough and continued until the mass is uniform in color, and homogeneous. Granolithic should not be mixed or laid unless it is maintained at a temperature of not less than 40° during mixing and for at least 72 hours thereafter, or until it has thoroughly hardened. If it is impracticable to comply with these conditions, specially prepared solutions of calcium chloride should be used in accordance with the directions of their manufacturers.

1. Machine mixing should always be done in a batch mixer of a type which will insure the uniform distribution of the materials throughout the mass, and it should continue for at least 1½ minutes after all the ingredients are assembled in the mixer.

2. Hand mixing should be done on a watertight platform, and special precautions taken after the water has been added to turn all the ingredients together at least six times, or until the mass is homogeneous in appearance and color.

D. Consistency

The wearing qualities of a granolithic floor improve greatly as the amount of water used in the mix is diminished. Hence the finished mixture should be of the dryest consistency possible to work with a sawing motion of the strike board. As even this is too wet for the best results, one of the two methods described here should be employed to further dry it. It has long been claimed that sidewalks and floors laid on the ground usually seem harder and less dusty than self-supporting floors. The writer believes that this is due in many instances to the fact that the surplus water is drained away by the fill on which such floors are laid. Some other means should be employed to accomplish the same result on self-supporting floors, hence the two methods given here:

1. The surplus moisture should be removed by spreading the cement and sand of the next mix over a sheet of burlap laid over the freshly screeded surface of the finish, thereby absorbing the surplus moisture, and then using the dampened cement and sand for the next mix.

2. To the mixing water should be added a specially manufactured solution of calcium chloride, in the proportions specified by the manufacturer.

Both of these methods are recommended by the American Concrete Institute, as it is claimed that otherwise it is generally impracticable to obtain a sufficiently dry mix. It calls attention to the fact that the calcium chloride must be in solution, must be free from all other chlorides, and that all free acids in it must be neutralized. If such conditions are complied with it accomplishes the desired results and does not injure the concrete. This precludes the use of commercial calcium chloride, and renders it essential to purchase it prepared especially for granolithic work; it can be obtained under various trade names. The calcium chloride method, however, is cheaper than that described in D. 1 and accelerates the setting of the cement so that a floor finished by this method will attain in four days the wearing qualities that would otherwise be obtained in from 10 to 14 days; also, the floor will be ready for troweling in about half the time it would otherwise require. The economy in labor by using calcium chloride will more than pay for the material.

E. Preparation of the Base

When granolithic is to be applied to concrete that has already set, the base should be treated thus:

The surface should be thoroughly roughened with picks, and then all loose particles removed by scrubbing with wire brushes; the surface should next be scrubbed with a weak solution of muriatic acid and wire brushes until all dirt and laitance have been removed. The surface should then be thoroughly washed to remove all trace of the muriatic acid. A grout of neat cement ought then be spread over the surface and well worked in with wire brushes. A specially prepared solution of calcium chloride should be used in making this grout.

F. Placing

The granolithic topping for a floor such as is described in A. 1 should be spread over the concrete base before it has set. The granolithic topping for type A. 2 should be spread over the floor with a trowel before the neat cement grout has set.

G. Floating and Troweling

After the granolithic has been spread over the base, it shall be screeded with a long, straight edge. When the proper consistency has been reached it should be wood floated first around the edge, then in the center. It should then be troweled with a steel trowel.

H. Protection

The granolithic finish should be kept wet down and protected from all wear for a period of at least 10 days after it has been laid. If the specially prepared calcium chloride solution has been used in mixing the finish, the period of protection may be cut to 4 days.

If the methods described here have been followed a dense, hard and non-dusting floor should be obtained, and the application of a liquid hardener to the finished floor would add nothing to its wearing qualities. There are, however, many old floors which are in poor condition, and there are several methods of treating them.

The first method tried out consists in applying silicate of soda. The objection to this method is that silicate of soda is soluble in water, and therefore its effect is not lasting. A later method employs magnesium fluo silicate. This unites chemically with the unhydrated particles of the cement and forms insoluble crystals. This method case-hardens the surface and prevents dust, but after this case-hardened skin has been worn or broken through, the surface below is no harder than before the treatment, and in some instances has even been softened by the treatment. Further applications are useless, as by the time the case-hardened surface has been worn away all the cement has become hydrated and no chemical action can take place. A third method consists in applying various mixtures of gums and oils which penetrate the floor, fill the pores and help bond the particles together. Such a treatment has a physical, not a chemical, effect and can be renewed.

The writer believes that the application of a chemical hardener is advisable only when it is necessary to immediately harden a new and soft floor.

The specifications outlined at the beginning of this article will produce the best results, but even they will not produce a wearproof floor but only one which is slow-wearing and non-dusting. To maintain such a floor in good condition it is advisable to treat it from time to time with one of the physical treatments just mentioned. These should not be applied until the concrete has thoroughly dried out and has been subjected to a period of wear of at least 6 to 12 months, and it should preferably be applied by specialists who will know how many coats to apply and the proper consistency for each coat.

Oil Fuel and the Architect

By MAURICE M. OSBORNE, M.E.

THE architect, in his advisory capacity to his clients, has for a number of years past been faced with the question of using oil as a fuel in the heating and power plants of buildings. Oil fuel is not a new thing, but at the close of a long and trying strike in the coal mining industry, with its resultant shortage, high prices and uncertainty as to deliveries, the question of using oil is brought up with renewed emphasis. The architect's conscience, prodded not a little by eager manufacturers of oil-burning apparatus, forces him to weigh with especial care the advantages and disadvantages to his clients of the use of oil and of coal as fuel to generate steam in their buildings.

With the use of oil as a fuel in central power stations, for industrial processes and for marine and locomotive use, the architect will not be directly concerned. Accordingly, this discussion will treat directly with oil fuel only as applied to commercial, residential and public buildings of the types ordinarily met with in average architectural practice. The fuel is used mainly for heating, and occasionally for small power plants.

The use of oil in the United States as a fuel in place of coal first began in those regions where coal was scarce and oil plentiful, notably in California and Texas. Its use was general in California by 1906, and in Texas by 1908. There was a real economic reason for this, quite apart from matters of pure convenience. The oil was patently cheaper than coal. In California locomotives and stationary boilers were soon equipped to burn oil, and have been burning it ever since. More will be said later on the probability of a long continuance of this practice. Since 1908 the burning of oil in place of coal has advanced enormously. In particular this applies to larger installations where 300 tons or more of coal per year would be needed to replace the oil burned.

Let us review the present methods by which oil is burned in place of coal under large boilers. Fuel oil in its usual sense is crude oil, from which the lighter constituents or "fractions," such as naphtha, gasolene and kerosene, have been removed. There are two general types of crude oils, paraffine base and asphaltum base. The final product of the refining of the first type is paraffine and of the second, asphaltum. Paraffine base oils are lighter than asphaltum base oils and are not so generally used for fuels, their chief value being as lubricating oils after the lighter "fractions" have been removed. The asphaltum oils are heavier, not so high in yield of lubricants, and sometimes are so "poor" in gasolene and naphtha that the crudes are used direct as fuel without refining.

It will be seen from this brief description of the nature of fuel oils that they must vary widely in their components and qualities. As a rule, at least on the Atlantic seaboard, the heavier oils are the cheapest and consequently the most used. Fortunately, these heavy oils have the highest heat value. These oils are so thick and viscous that they must frequently be heated so as to flow at all. This is especially true in cold weather. By heating the heavy oils, they can be made to flow readily.

The heating or calorific value of fuel oil is very much greater per pound than that of coal. This means that each pound of oil burned completely, without excess air, gives off more heat than the same weight of coal burned in the same way. Although there is a wide variation in the heat values of different oils and coals, fair average figures would be:

Oil, 19,050 B.t.u. per lb. (20° Beaume°).
Coal, 14,000 " " " " "

By taking a high heat value for oil, and a low heat value for coal, or *vice versa*, protagonists of oil and coal can make their figures tell very different stories. On the basis of these figures, if oil cost the same price per pound as coal, and both could be burned under boilers with equal efficiency, the oil would be worth 1.36 times the coal. But the mere fact of the greater heat content of oil is in itself of no economic advantage, excepting where storage space is paramount, as on shipboard. What counts is the cost per B.t.u. With bituminous coal at $9 per short ton, and cheap Mexican oil at $1.95 per barrel, we have:

Coal, $.00450 per lb. Oil, $.00575 per lb.

Reducing this to cost per 1,000,000 B.t.u., we have:

Coal, $.321. Oil, $.301.

The prices given here for coal and for oil are not those prevailing in all parts of the country, but are merely the approximate current prices at Boston. Prices will vary widely in different localities, depending upon transportation facilities, etc. Before coming to any conclusions as to relative costs of coal and oil in any given locality, a careful investigation must be made. Extravagant claims are frequently made for equivalent values of oil in comparison with coal. Comparisons are often not reduced to equivalent figures and are misleading. The figures given here are representative.

We also have these advantages for oil: loss of heat up the chimney is less than for coal, because of smaller amount of excess air required for combustion; there being no necessity for opening and closing doors for firing, furnace temperatures are more constant with oil; as a result, furnace efficiency is higher, or rather higher furnace efficiency is easier to get with oil than with coal. The cost of handling fuel is much reduced. Oil is pumped from storage tanks to burners; there are no ashes, and the labor charge is much cut down.

The cleanliness of oil-burning plants is notable, as far as the boiler room is concerned, but many complaints have been made of oil-burning plants because of soot from the smoke and of bad odors from the chimneys. A poorly operated oil-burning plant can be more of a nuisance than a poorly operated coal-burning plant.

There is no question but that steam can be raised more quickly in a boiler with oil than with coal, and that standby losses are less than with banked coal fires. To exceed the rated load of a boiler, the draft must be sufficient. Oil will not necessarily give greater overload capacity than coal. This depends on the chimney. At the present time deliveries of oil are sure and steady. Coal has not this advantage. It is claimed that oil saves in storage space, and this is certainly true. But most far-sighted owners, installing oil-burning apparatus, have provided coal storage space in their buildings as well, so that this argument has not much force for general practice.

So much, for the moment, of the pros and cons. Let us go on to describe the apparatus used in burning oil under boilers. The oil is stored either in large, horizontal, cylindrical steel tanks, buried underground, or set up in basements, or else in concrete tanks. Suitable piping is installed to carry oil from a sidewalk connection to the tanks. A small steam heating coil is usually placed around the pump suction pipe in the tank to insure free flow of oil into the suction line. From the storage tank the oil passes through filters or strainers, to remove water, and thence through the pumps to the heaters. These heaters are so arranged as to deliver the oil to the burners at as nearly a constant temperature as possible. There is a very definite reason for this. Only if the oil is kept at a constant temperature will it be at constant viscosity, and flow in a constant stream through the burners. A sudden cooling of the oil will retard the flow tremendously; a warming up will increase the delivery. Sudden variations in temperatures of oil delivered at the burners are responsible for most cases of smoke, imperfect combustion and lowered efficiency in oil-burning plants.

At some point in the piping a relief valve, with bypass to the tank, is set, so as to maintain a constant pressure. This is as necessary as the constant temperature. When very heavy oil is used, the piping should allow it to flow in a complete circuit to some extent at all times.

The so-called "burners" are really misnamed. The oil burns in the furnaces under the boilers and not in the burners. Their function is to break up the oil into a large number of fine particles, and blow them in the form of a mist, properly mixed with air, into the furnace, there to be burned. Burners are of a number of types:

1. Rotary, in which the oil is atomized by a mechanically operated whirling device, which throws it off in fine spray and into the furnace.

2. Steam atomizers in which dry steam is used to break up the oil. Sometimes high pressure compressed air is used instead of steam.

3. Low pressure air atomizers.

Other types of burners exist, not adapted to the installations under consideration.

Rotary burners of the first type are usually operated by small electric motors, sometimes in conjunction with air blowers. If heavy oil is used, it must be thoroughly heated before use, or else a light oil must be used for starting. The steam or high pressure atomizers are most commonly used. Even though they consume on an average 2½ per cent of the total steam generated, they are economical by comparison with other types of burners. The steam must be dry or damage to the furnace is sure to result. The low pressure type is used frequently where high pressure steam is not available. It is made in many satisfactory forms.

In all types of burners the stream of oil to be fed at light loads is so small that once the average steam requirements fall below a certain amount, it is not practicable to maintain a steady fire with heavy oil. This is why there is a line beyond which, at present, heavy oil installations do not successfully go. Smaller plants, for house heating, must use lighter oils, and will be described presently.

Boilers set up to burn oil need no grates, and should be set to allow for ample gas travel and room for combustion. But as a matter of fact, they are usually arranged so as to be readily convertible to coal burning by installation of grates. Ash handling facilities are likewise allowed for. The first cost of the simplest practicable oil-burning system is very much higher than that of the corresponding coal-burning system.

Small oil-burning installations for heating residences of average size are now on the market. During the present emergency manufacturers of some of them have confidently marked up prices. Several such systems are practical, and give clean, automatically regulated heat with a minimum of attention. They burn either kerosene or a light grade of fuel oil called "furnace oil." Really heavy crude is impracticable for reasons already given. These systems have everything on their side excepting first costs and operating costs. On these two counts there is nothing to be said in favor of them, but they will save much worry over the coal situation and be delightful luxuries in every way. A house owner will make no mistake in installing such a system if he can afford it. After all, the investment is not the first consideration in a home, and comfort and peace of mind are paramount. There is not the slightest question that use of these devices will increase these two last desirable items to a very great extent, but they will not eliminate the choreman altogether. No choreman works full time on a coal-fired house boiler.

The architect will be called on to advise his client as to oil-burning equipment. His client's best interests will be differently served, depending on the purpose to which his building is to be put. A classification may be:

1. Buildings for immediate sale on completion.
   Office buildings, theaters, apartments, hotels, stores, other business buildings and residences.
2. Buildings where sure service is necessary, such as hospitals, etc.
3. Buildings for personal use such as residences.
4. Buildings for investment.
   Office buildings, theaters, apartments, hotels, stores and other business buildings.
5. Public buildings.

Let us leave this classification for a time and consider more closely the general economics of oil *versus* coal; then we may return to it and form some conclusions.

First let us look at the actual conditions as they are at present. Coal is high and hard to get; oil is cheap, for oil, and easy to get. On this count alone the oils have it. Comparative costs on a really fair basis are impossible to get. Unless two absolutely identical plants existed side by side, with identical demands on each, one burning oil and one coal, comparison could not be made. Average temperatures and heating requirements vary from year to year. If the plants in question make electrical current as well as supply heat, a comparison is all the more difficult, for hours of light and darkness also vary from year to year. However, such figures as are available seem to show that oil, with its many advantages of convenience, at least has split even with coal for the last few years on a hard dollars-and-cents basis, and frequently, as nearly as can be told, has beaten coal.

Now for the future. It has long been known that the oil reserves of the world are very much less than its coal reserves, and that at the present enormous rate of oil consumption, exhaustion of world oil supplies, at least to the point of vastly higher oil prices than at present obtain, will be a matter of a comparatively short time. Our country is now producing 62 per cent of the world's annual supply of oil, and is using 75 per cent of that supply. Our requirements are growing, and will continue to grow until checked by high prices due to scarcity or high production costs.

It is increasingly apparent that at least two-thirds of the oil reserves of the world, outside of the United States, are not to be open to development by American capital. The present oil reserves of the world outside of the United States have lately been estimated at from 60 to 70 billions of barrels, recoverable by present methods. This is sufficient at the present rate of consumption of all countries outside of the United States to last them 215 years. Our own reserves are estimated at 9 billion barrels, recoverable by present methods, while our consumption in 1921, a professedly bad year, was 470 million, or almost one-half billion barrels. If we kept on at that rate, all our oil would be gone in 18 or 19 years. However, there is no danger of this because long before this point is reached oil will be so much harder to recover and will therefore have risen so much in price that in all probability we shall be producing it for 75 years to come. This is a point that is not always clearly brought out in the press or in discussions regarding oil supply. We do not expect to run out of all oil suddenly and in a short time. Long before that time is reached oil will cost so much, on account of the difficulty of extraction and transportation costs, that its decreasing use will increase the period of its exhaustion. The first increases are not far off, as will be shown. It will not take a very great increase in oil cost to make oil burning far less advantageous than at present. We are already dependent on foreign oil to meet our requirements, and in 1921, a period of industrial depression, we imported one-quarter as much oil as we produced. Almost all of this came from Mexico, and nearly all of this Mexican oil came from the Tamposopo field, a unique axis of folding in limestone, containing in its high points great pockets of gas and oil, under terrific salt water pressure. These pools have produced oil in such enormous quantities and with so little effort that oil fuel has been cheaper and more readily available than ever before.

Some purveyors of oil and oil-burning apparatus have told the public that this Mexican supply is practically inexhaustible. But as a matter of fact most of these wells are going or have gone to salt water, and in a comparatively short time it is expected that the remainder of Mexico's oil will have to be wrung from wells of the ordinary type by hard work and at an increased cost. In fact, to keep up the export of oil from Mexico at the present rate, when supplied by ordinary wells, it is believed by experts that a price comparable with the cost of extracting oil from shale would have to be charged.

Every indication points to higher prices to come for oil, particularly in the United States. We have enjoyed lower oil prices than almost any other large nation, and the time is not far off when we shall have to pay more for it. With the inevitable decrease in cheap Mexican oil production coming not far in the future, the first price rise is likely to come. And when that takes place, what shall we do about burning oil in stationary boilers in buildings? We shall give it up because we can no longer afford it.

In California the problem of oil depletion is already being faced by leading engineers. They are turning to coal as the only reliable fuel for the future, and are already figuring on where it can be obtained. The world's coal supply has been estimated at about 5,000 billion tons. Our own reserves are ample. There is absolutely no question but that coal in some form will be the fuel of the future. Oil will continue to be used in marine transportation, this being where it particularly shines as a fuel, because of space requirements and other patent advantages. It will pay to burn oil on shipboard long after it ceases to be profitable on land. The views here expressed are not those made public by some people, but after a careful examination of available information they seem to represent the more conservative aspect of the situation.

Now let us turn again to our classification of buildings:

1. If the owner builds for immediate sale, he can well install oil-burning apparatus, whatever the type of building, and let the purchaser do the worrying in case the price of oil advances too far. Such advance is not likely for a few years to come at least.

2. If the building is to be a hospital, where heat and light must be provided at all times and at all costs, oil burning is well advisable, with its attendant advantages in other directions. But the architect should consider future coal storage requirements and provide for them in his plans. The furnaces under the boilers should be convertible to coal burning without too much difficulty or delay.

3. When buildings are for personal use, and the owner is willing to pay first cost and running expenses, the small house heating oil-burning systems are in every way practicable and worth while, and are a great luxury and convenience for the family.

4. When an owner builds for investment, it is much more questionable whether oil burning will pay. It would be worth while to consult with owners of similar buildings, burning both oil and coal, before coming to a decision. Coal will be easier rather than harder to get next year than now. It should also be cheaper, or at least no more expensive. In the event of oil's being decided upon, space should be left for coal storage, and arrangements made for ready conversion of the plant to coal burning at any time it seemed best.

5. Public buildings, being everybody's business, are often matters of extravagance—but as a fact, they should be considered, as far as operation is concerned, on a parity with buildings built for investment, and treated accordingly.

Note: The subject matter in this article dealing with world oil reserves is based on these papers:

"The Oil Supply of the World." David White, Chief Geologist, United States Geological Survey, published in *Mechanical Engineering*, official monthly Journal of the American Society of Mechanical Engineers, September, 1922.

"The Future Fuel Supply of California." C. H. Delany, Pacific Gas & Electric Co., San Francisco.

"The Marine Fuel Problem of the Pacific Coast." D. Dorward, Jr., Consulting Engineer, San Francisco, published in *Mechanical Engineering*, October, 1922.

Plate Description

Central Presbyterian Church, Montclair, N. J. Plates 1–6. The more advanced type of the New England meeting house has obviously supplied the basic motif upon which Carrere & Hastings, with Shreve, Lamb & Blake as associate architects, have developed this dignified and practical church group. The church proper, with all its architectural correctness of portico and spire, is amplified by placing slightly to one side an auxiliary building which provides quarters for the manifold activities now included in the work of a church in a rapidly growing suburban town.

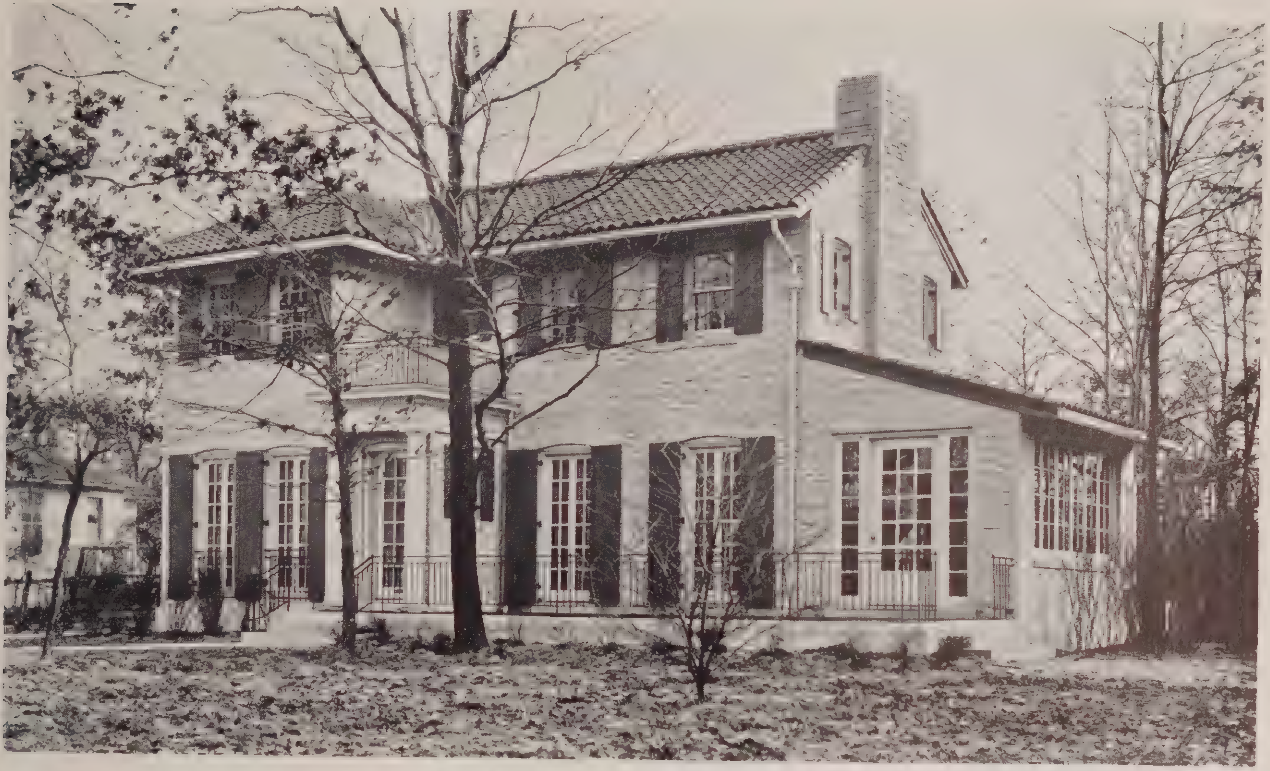
These buildings, which are designed in a comparatively simple version of the Georgian style, are of red colonial brick with light mortar joints, trimmings and base courses of Indiana limestone, wood cornices and slate roofs. The ground floor construction of the church is of reinforced concrete, and the roof trusses are of steel. The portico surrounds the square tower which forms the base of the spire, as in several of the meeting houses built during the later colonial period, and at the sides of the building are large round-topped windows placed over smaller square-topped windows to conform to the interior arrangement which makes use of the familiar galleries at each side and across the west end of the auditorium proper. The organ is not placed, as was customary in the older buildings, at the west end over the entrance, but in accordance with present-day usage is at the opposite end, and it is divided into two sections which are played from one console or keyboard.

To render the pews in the side aisles more useful than is generally the case in the older churches the columns or piers which support the galleries are placed closer to the outside walls, thus affording a view of the minister's desk and the pulpit from practically every seat in the auditorium. The general finish of the church's interior—plaster walls, ceilings and wood trim—is of ivory tinted enamel, with mahogany used for furniture, screens about the pulpit and communion table, and for the cap mouldings of pews and the hand railings of stairways. Floors under the pews are of oak; cork tile is used for aisles and about the entrance and at the platform, while in the vestibule the floors are paved with quarry tile. The recessed pulpit end of the church is lighted indirectly by cove reflectors on the top of the cornice, while the rest of the auditorium is lighted by drum fixtures. The ground floor of the auditorium seats 600; the gallery, 364.

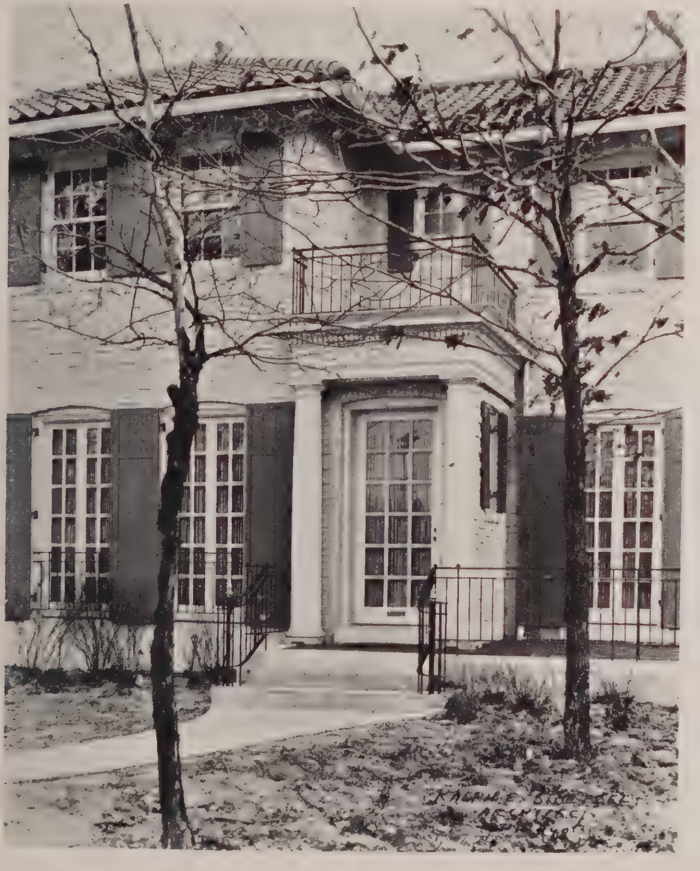
Materials for the auxiliary or service building are substantially the same as for the church, and the basement contains the plant which supplies low-pressure steam heating with direct radiators for both church and service building. The bellows for the church organ is also in this basement. Plaster walls and ceilings are painted in light colors; interior trim is also painted. Kitchens and auditorium have floors of maple, other rooms being floored with comb grain, long leafed pine, while in wash rooms and shower rooms floors and bases are of tile with hard cement plaster wainscots. Stairways are of wood, painted excepting the treads and handrails which are stained. The auditorium of this building is intended for motion pictures and amateur theatricals and also for use as a gymnasium, and a balcony is placed across one side.

A Small Brick House with Unusual Wall Texture

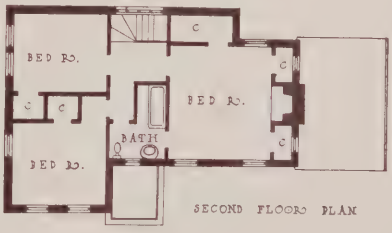
RALPH H. STOETZEL, ARCHITECT

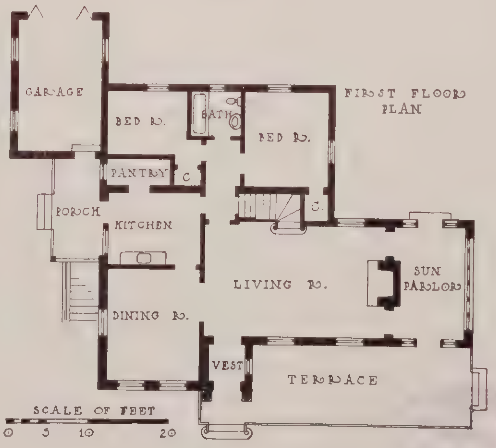


CEMENT WASHED BRICK HOUSE AT GLENCOE, ILL.



THE charm of many old brick buildings lies in their texture. Here upon common brick of unusual roughness, a single brush coat of dampproofing white cement affords a surface full of character and texture.





EDITORIAL COMMENT

AMERICAN ART TRADITIONS

FOR many years there has been persistent neglect in acknowledgment and appreciation of the art efforts of the early days of this country. Every important city has developed an art museum, but for the most part the trustees have placed all their emphasis on securing examples of European art, thinking possibly that otherwise their dedication to the "fine" arts would not be justified. This has been a great mistake, because we have in early American work examples of high artistic merit, not only in painting, but in architecture, furniture and silver making and numerous other crafts. They furthermore exhibit a native character, modeled of course on European precedent, but of more than passing interest because of being produced under the handicapping conditions of use of less magnificent materials, and lack of large financial patronage and the thorough academic training enjoyed by European artists. Early work was largely a product of men who were able to appreciate the fine things produced in Europe and who were sufficiently skilled to produce things in the same spirit, even when they were forced to simplify them greatly.

To American architects may largely be given the credit for bringing about a consciousness of the value of our early art traditions. They recognized the beauty of colonial architecture and its appropriateness to modern domestic requirements particularly, and have in recent years through study of the examples of early houses extant acquired a knowledge of the principles of colonial design that has enabled them to handle the style with marked intelligence and a freedom that makes it today a live factor in American architecture.

An undertaking that will greatly aid the work of instructing the public so well begun by architects is the building of the American wing of the Metropolitan Museum of Art in New York. The museum has for several years been forging a link between its collections of art and the various industrial arts, through which the designers engaged in commercial pursuits could have access to and be influenced by the treasures housed in the museum. The benefits derived from this museum activity are already notable in many branches of American industry in which the element of design is important. There is a wide application of early American ideas in furniture, fabrics, silver and other objects to modern articles of trade, and with the new wing the Metropolitan will have the opportunity of displaying adequately and in a proper setting the wealth of material it has collected. This collection embraces examples of all the arts and crafts, and the new wing will for the first time afford an opportunity for a comprehensive survey of the evolution and varying characteristics of early American art.

The plans for the structure have been prepared by Grosvenor Atterbury in collaboration with the museum authorities, and construction work has already been begun. It will be three stories in height, measuring about 81 feet by 60 feet, and will contain 18 exhibition rooms, mostly of a small and domestic character befitting the objects to be installed in them. Each floor will have a large central exhibition gallery opening on three sides into smaller rooms. The central gallery will be used for the arrangement of collections of furniture and other decorative objects grouped by material. In the smaller rooms will be installed the actual woodwork from a number of early rooms, and they will be furnished with various articles which will contribute toward the recreation of the effect of a room of the period from which the woodwork dates.

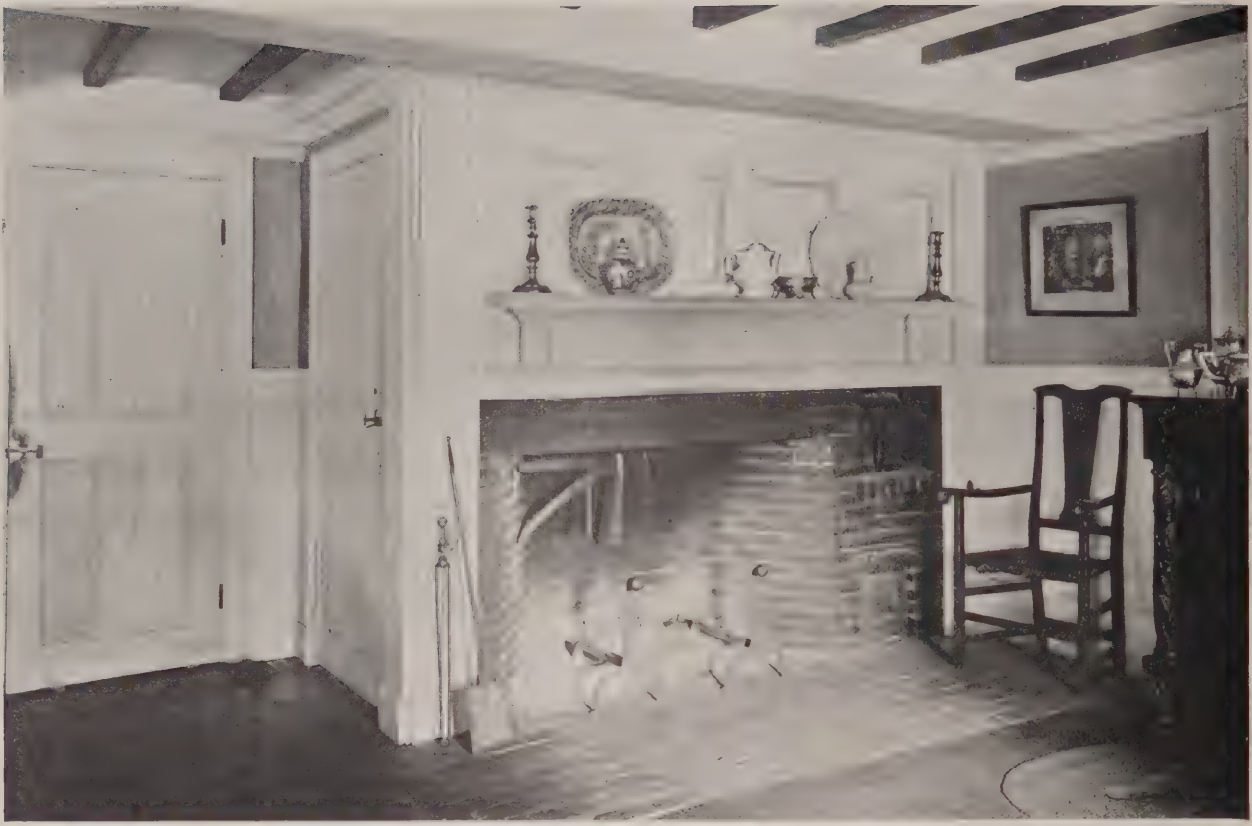
As part of the south facade of the wing there will be reconstructed the marble front of the building familiarly known as the old United States Assay Office, formerly at 15 Wall street, New York. This fine facade was preserved for the purpose through the efforts of Robert W. de Forest, president of the museum, who with Mrs. de Forest is the donor of the new wing. In its final development the wing will form the north side of a quadrangle on the south of which will be incorporated the Wentworth-Gardner House* from Portsmouth, New Hampshire, purchased some years ago by the museum. The east and west sides of this quadrangle will be formed by one-story connecting corridors against whose walls will be set colonial doorways. The ground of the quadrangle will be treated as a colonial garden.

When this notable collection of early American work is worthily installed its interest will by no means be found to be confined to sentiment or history. It will teach the present and future generations of our people that the men to whose struggles they owe the foundation of the American commonwealth were refined in their tastes and by no means indifferent to beauty. Though for the most part they neglected the arts of painting and sculpture, their instinct found its expression in the houses they built and the furniture they bought for daily use. Their builders and craftsmen were endowed with a fine sense of line, proportion, and the proper limits of decoration. The Metropolitan Museum is deserving of the greatest praise for the opportunity it presents for such education, and we trust that the public and artists will respond in a fitting manner.

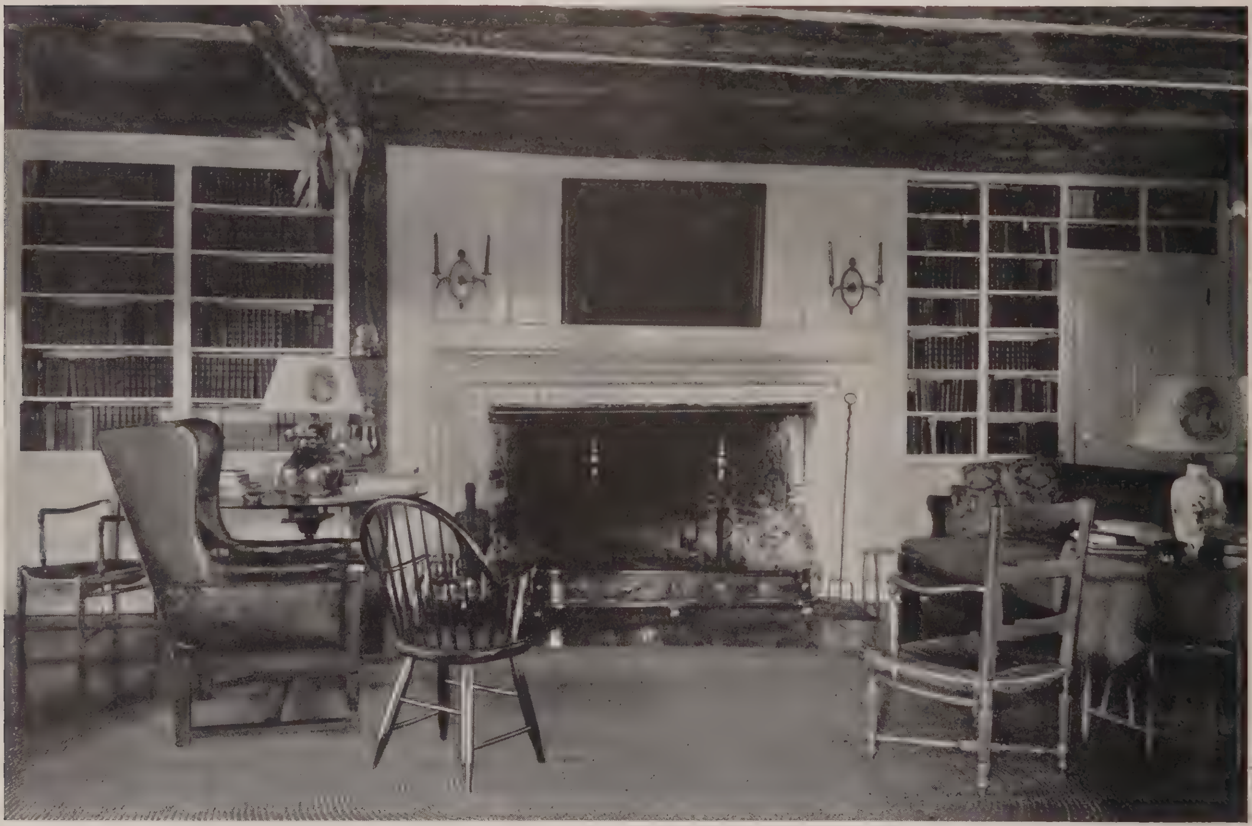
*Complete measured drawings of the Wentworth-Gardner House were published in THE ARCHITECTURAL FORUM, February, 1920.

DECORATION *and* FURNITURE

A DEPARTMENT
DEVOTED TO THE VARIED
PROFESSIONAL & DESIGN INTERESTS
WITH SPECIAL REFERENCE TO
AVAILABLE MATERIALS



DINING ROOM FIREPLACE, WAYSIDE INN, SUDBURY, MASS.



LIVING ROOM IN RESTORED EIGHTEENTH CENTURY FARMHOUSE, LONG ISLAND
PEABODY, WILSON & BROWN, ARCHITECTS

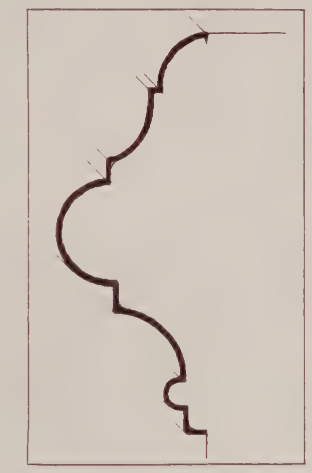
Early Eighteenth Century American Interiors

By EDWIN J. HIPKISS
Keeper, Department of Western Art, Museum of Fine Arts, Boston
Drawings by the Author

THE purpose of these notes is to give some thought to the character of interiors and the finer furnishings of American houses during the first three or four decades of the eighteenth century. It is hoped that an attempt at bringing together some of the things which help to express style, or a spirit of the time, may prove interesting and possibly helpful to designers in connection with their work today.

It is well perhaps to recall that houses had been built here in a simplified form of the contemporary English renaissance before the end of the seventeenth century, and that in England the career of Sir Christopher Wren was at its height. In furnishings, the influence of the Dutch was strong, for the accession of William the Stadtholder to the English throne in 1698 brought about "an invasion" of Dutch craftsmen, ideas, materials and designs which largely shaped the course of decorative arts through the succeeding reign of Queen Anne.

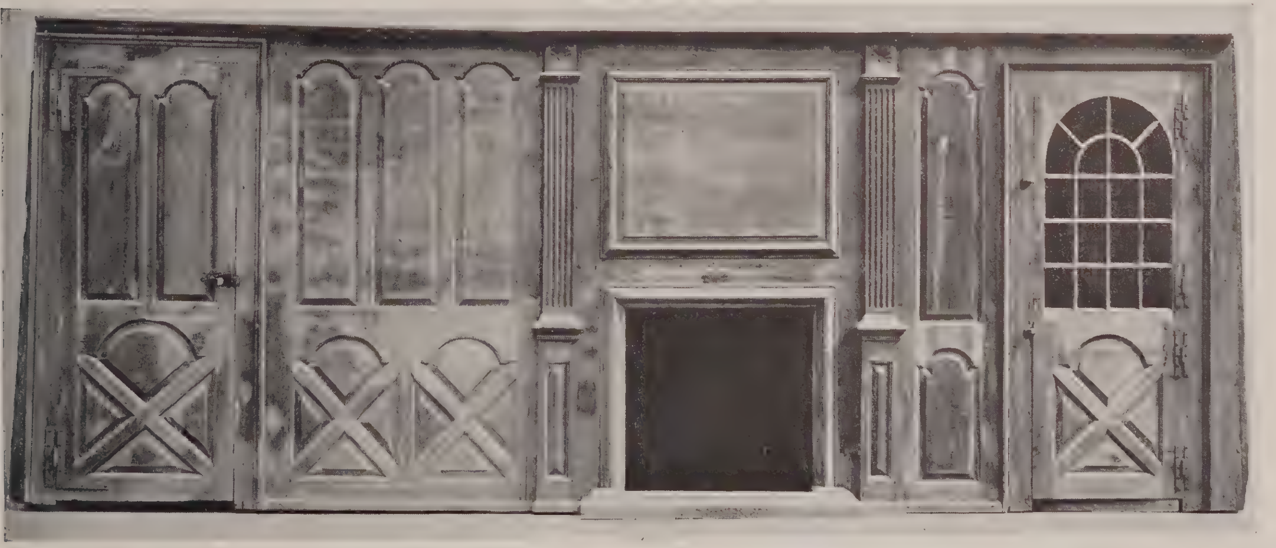
Some of our houses of the eighteenth century, ranging in date from about 1715 to 1735, are the Short house at Newbury, Mass., the Warner house at Portsmouth, N. H., the Brenton-Coe house at Newport, R. I., Shirley on the James River, Va., the Royall house at Medford, Mass., and the "Dorothy Q." house at Quincy. The earlier rooms we find were often paneled in native pine, with raised panels framed with bolection mouldings, reflecting English practice, in larger scale, at that time. Fireplace facings were also framed with heavy bolection mouldings. There was seldom a mantel shelf. Important rooms were 10 feet high in New England and higher in the South.



Half Size Section Bolection Fireplace Moulding from Coventry Room

Against simple walls the richer pieces of furniture and the bright colors in furnishings must have been very effective, or a reversal of this idea might find simple pieces of walnut or maple against walls covered with landscape painting in oils or with Chinese papers from chair rail to cornice. More modest rooms, such as that in the Short house, had neither paint on the walls nor on the woodwork, but unpainted pine, toned into subtle browns as found in old rooms, has a richness of its own not easily duplicated.

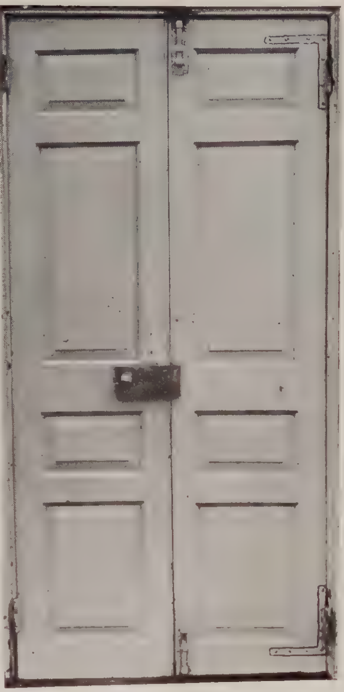
Wall Decoration. Walls were usually paneled on the fireplace sides; other walls were painted or papered above a dado. Rather literal-minded landscape scenes were executed by home or wandering talent; the East India trade contributed Chinese papers, and printed cottons came from India and Persia. The word "chintz" is of eastern origin. "Stained papers" were made in England early in the century and later here—about 1765. Wall papers were first made in square sheets and sold by the quire at the bookseller's. The Hancock house, which was demolished in 1863, was the last of early Boston mansions. Its builder, Thomas Hancock, wrote in 1737 to Mr. John Rowe of London: "Sir, Inclosed you have the dimensions of a Room for a Shaded Hanging



Early Eighteenth Century Pine Paneling from Coventry, Conn. Height of Paneling, 6 ft., 9½ ins.
Now in Metropolitan Museum

to be done after the same pattern I have sent per Captain Tanner . . . if they can make it more beautiful by adding more birds flying here and there, with some Landskips at the Bottom, Should like it well . . . In other parts of these Hangings are Great Variety of Different Sorts of Birds, Peacocks, Macoys, Squirril, Monkys, Fruit, Flowers, etc." These "Hangings" were wall papers for the Hancock house; note the date,—1737.

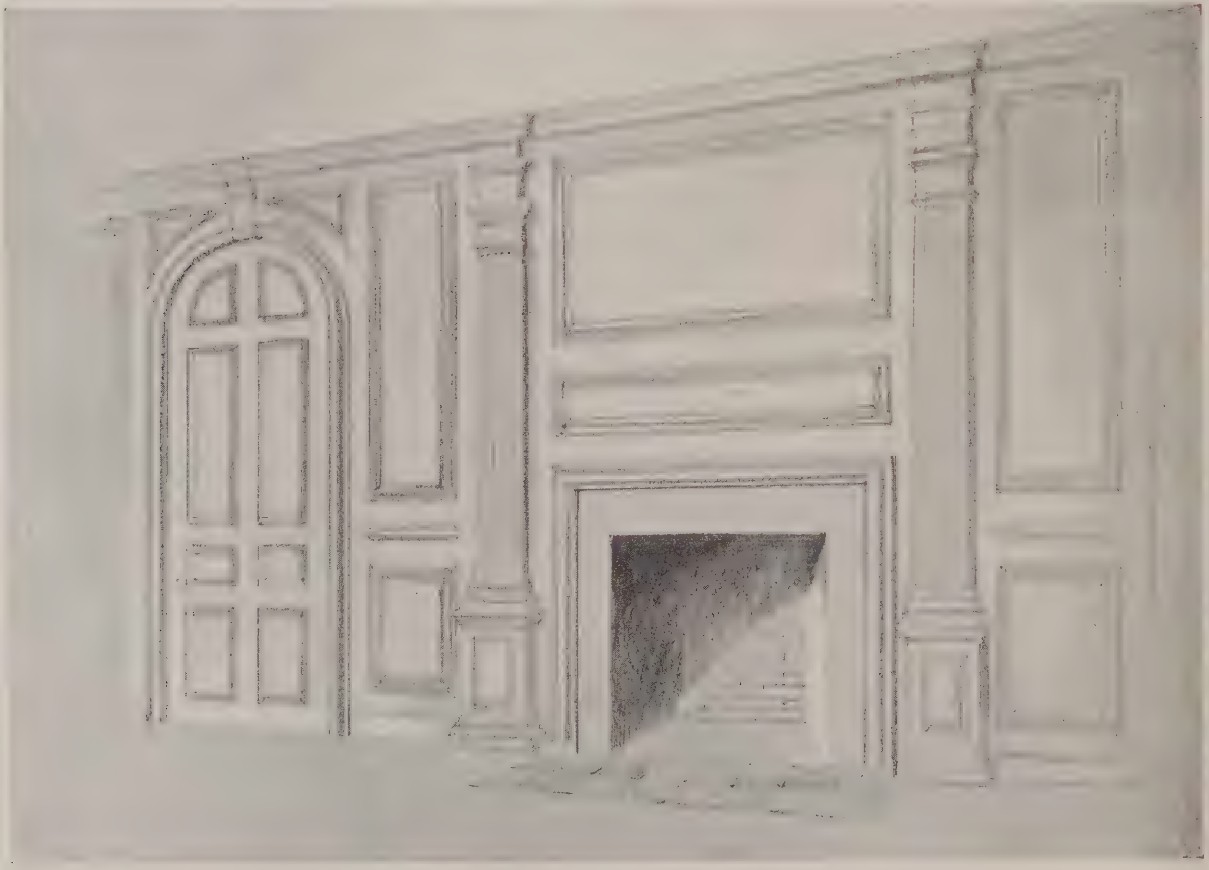
Furniture. In furniture we look for William and Mary and Queen Anne types in the main. An occasional earlier piece, such as would naturally come by inheritance, breaks up any tendency toward a rigid and unnatural "period setting." Walnut was the wood much used, but not exclusively. The simple, well made furniture, of marked native character in general use, was made mostly of maple and pine. Windsor chairs were made at Philadelphia in the second quarter of the century. On fine cabinets richly grained veneers and panels of japanned decoration were used; the latter were European versions of oriental work in lacquer. In Boston, as early as 1712, Mr. Nehemiah Partridge advertised that he was prepared to do all sorts of japan work.



Eighteenth Century Doors in Metropolitan Museum. Original H and L Hinges Indicated at Right

Looking glasses were highly prized. They were made in England during the latter half of the seventeenth century, for in Evelyn's diary, for the year 1676, we read of "the Duke of Buckingham's glass house at Lambeth" where are made "looking glasses far larger and better than any that came from Venice."

Fireplaces. The cavernous fireplaces of the seventeenth century, as wide as ten feet, now become reduced to five or six. Chimney breasts were simply paneled, and bolection mouldings enclosed the fireplace facings. These facings were often of Delft tiles with hearth of dark red quarry tiles eight inches square. Old brickwork always makes an obtuse angle at the jambs. Wrought iron cranes are characteristic, as are the fire tools—shovel, tongs and bellows. Iron firebacks, with decorative subjects in relief, were used as an aid to heating and to protecting the back walls against extreme heat.



Paneling in Brenton, Coe House, Newport, R. I.

Hardware. Wrought iron served almost exclusively for hinges, doorbolts and latches. On the principal doors were box locks of brass with brass knobs. In the Boston *News-Letter* of February 24, 1736, we learn that "William Coffin, at the Ostrich near the Drawbridge, makes and sells Mill Brasses, Knockers for Doors, Brasses for Chaises and Sadlers, Brass Doggs of all sorts, Candlesticks, Shovels and Tongs, small Bells and all sorts of Founders ware." Nailheads, freely faceted by five or six blows of the forgeman's hammer, add interest in old wrought iron hardware.

Short House – Newbury, Mass.

Early Eighteenth Century Paneling in Short House, Newbury, Mass.

Painting. It seems probable that the greater part of woodwork in both paneling and furniture knew no paint. Painters are hardly to be met with in early lists of workmen. Even late in the century it was said in Salem, "Well, Archer has set us a fine example of expense,—he has laid one of his rooms in oil"—a quotation for which we are indebted to Alice Morse Earle. Mansion rooms were "laid in oil" we believe on the evidence of old rooms, and two early examples show sage green to have been a variant in the use of white woodwork. Most furniture was given an oil finish on wood, and handiwork was of a kind which had nothing to conceal under a coat! Selected wood became richer in surface through years of service; and it took on character.

Floors. Wide boards of country pine were used for floors; a firm knot here and there was apparently not objected to. A room in the Wilder Tavern at Hingham has only eight boards in a room nearly 14 feet wide. The edges were halved and lapped about half an inch. Some old floor colors were pumpkin yellow, buff, warm gray, low toned green and blue.

Lighting Fixtures. Candle light shone forth from chandeliers, sconces, candlesticks and candlestands. There are few enough of the latter remaining and hardly one of the former. (The Warner house has a glass chandelier brought from England in 1765.)

Silver. Craftsmanship of the time is well exemplified in the work of American silversmiths. Accepting certain models, as being customary, their skill was bent toward executing those models exceedingly well. In a large collection of silver it will be seen that each piece has individuality, and yet the same forms were popular through two or three generations.

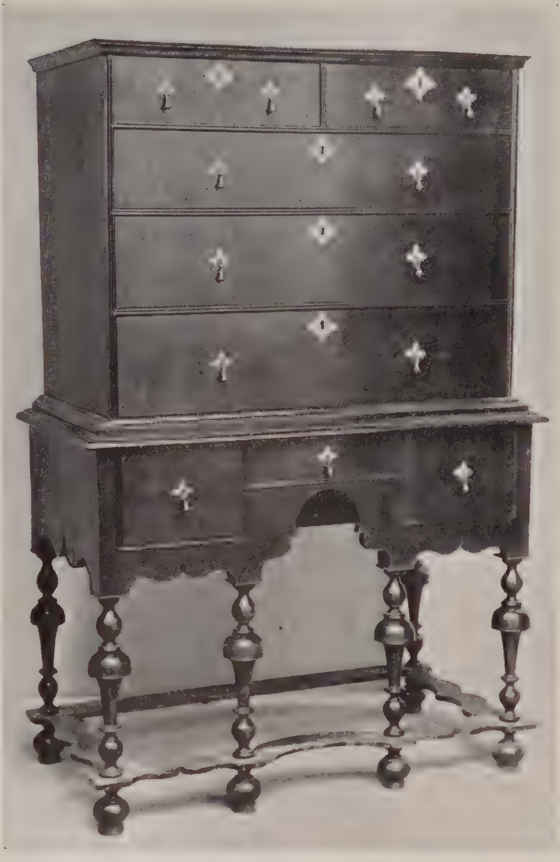
Mid-Eighteenth Century Paneling, Warner House, Portsmouth, N. H.

Such evidence as may be found in Hollis French's list of American silversmiths, published by the Walpole Society, controverts the impression given by some historians that little plate was in use at this time. The writer has selected from the list just mentioned the names of silversmiths working in Boston alone during the years 1700 to 1750 inclusive, and finds there were over one hundred master craftsmen, not including the silversmiths of Dorchester, Roxbury, Charlestown and other nearby places. John Hull, Allen and Edwards, Benjamin Burt, Jeremiah Dummer and Jacob Hurd are a few among makers of fine domestic and church silver. Fine engraving was a part of the craft, and examples will be shown in a succeeding article.

Porcelain. "China," as all porcelain was and is popularly called after the land of its origin and highest development, is essentially of the eighteenth century in Europe. It would be interesting to know to what extent early English and continental porcelains were brought to the American colonies, for it is on record that some white clays from the Carolina mountains were imported by English porcelain makers. Bow, Chelsea and Derby porcelains had their beginnings in the second quarter of the century. Although woodenware, pottery, pewter and silver served generally, the increased knowledge of oriental porcelain stirred certain parts of Europe. Delft pottery had become pseudo-Chinese in forms and decorations, and formulae had been evolved for the making of soft porcelains through attempts to match the charming, mysterious substance brought out of the East, an indefinite and fascinating part of the world then spoken of as "India."

In 1709 the German apothecary, Böttger, discovered the secret of the Chinese, and true or hard porcelain was made in Meissen. He had so perfected it by the year 1716 that it has remained since that time the type for the whole of Europe. In New England in 1750 there was a tax of 5 per cent on all importations of "chinaware, gold and silver lace, French cambrics," etc. Pottery was made through the seventeenth and eighteenth centuries, but it was of humble character.

Floor Coverings. Carpets (*i.e.* rugs) had been brought to England for centuries from India and the Levant. In 1701 a charter was granted to Wilton for the making of carpets in England, and enthusiastic ladies also made them of needlework at home. It seems, therefore,

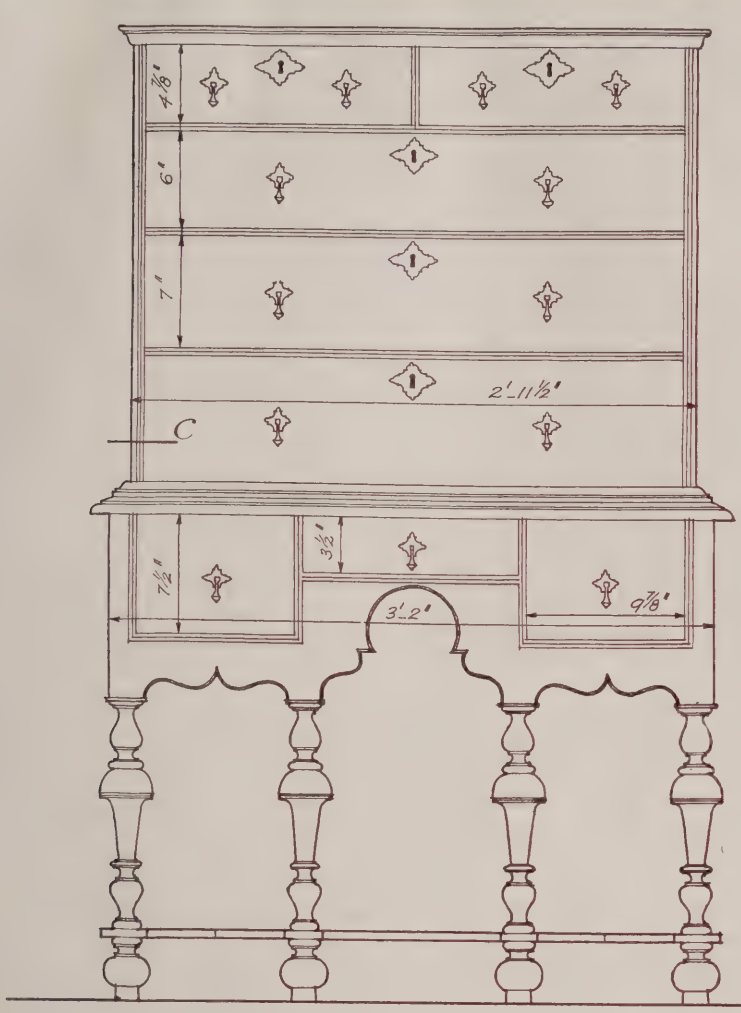


American Walnut Highboy
From the Metropolitan Museum of Art
Measured drawing on opposite page

American Chair *circa* 1700, Indicating Charles II Influence

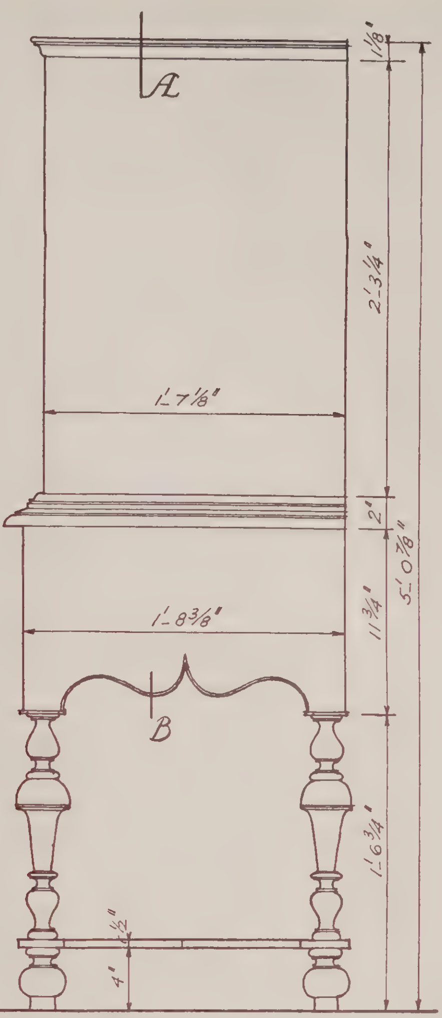
Gate Leg Table of Maple, Probably Second Quarter, Eighteenth Century

American Chair in Simple Queen Anne Style

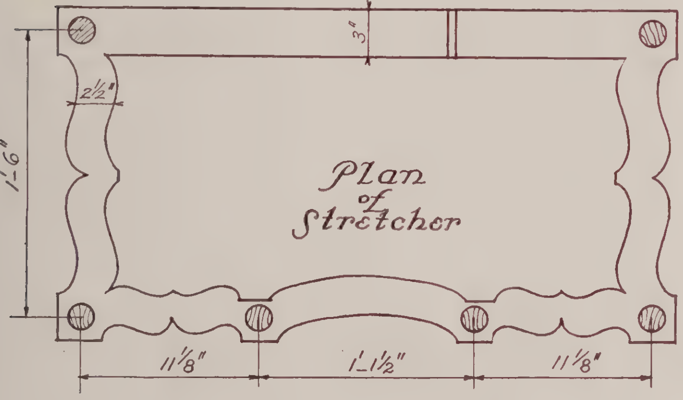


Front Elevation

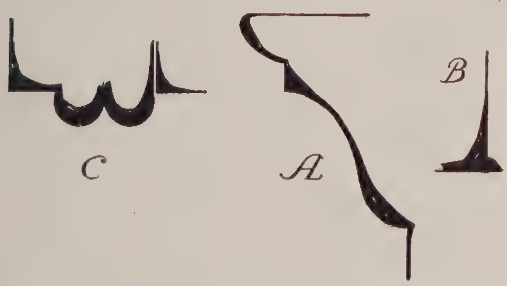
scale 1"-1'-0"



Side



Plan of Stretcher



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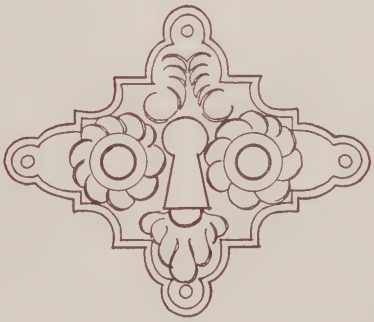
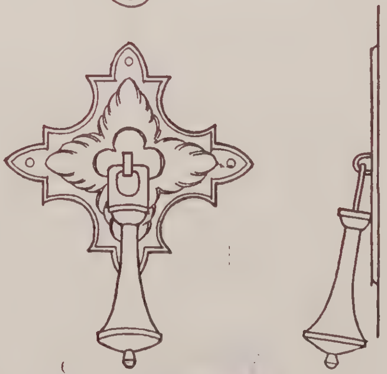




AMERICAN WALNUT HIGHBOY

1700 – 1710

from the Metropolitan Museum of Art
NEW YORK CITY

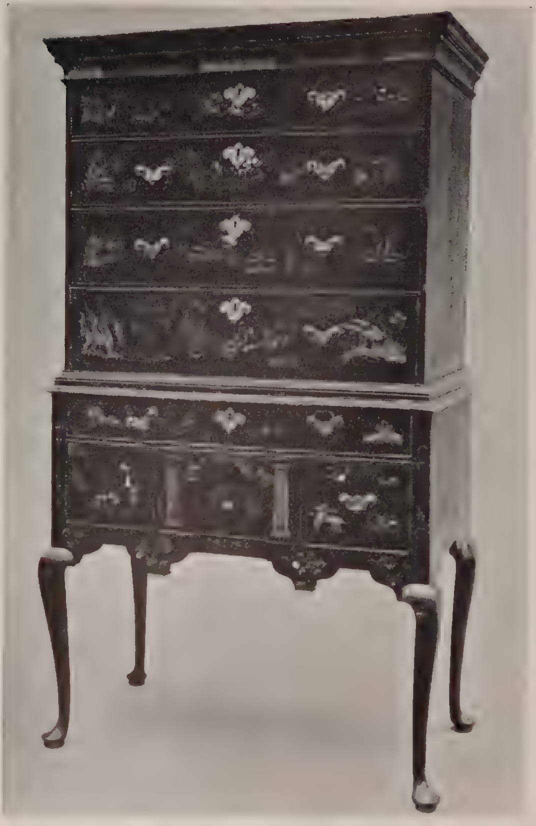
that the fine furniture which we know to have been in the colonies must have had its complement of fine carpets. The Copley portrait of Jeremiah Lee displays an oriental carpet at the feet of the original owner of the Lee mansion in Marblehead. The picture was painted in 1748.

Needlework. A minor art which takes on special interest in relation to early eighteenth century style is needlework. It was varied in stitch and design and was adapted to use with numerous items of furniture,—fire screens, beds, chairs, benches, sofas, and even to the panels of cabinets and frames of mirrors. The personal interest of Queen Anne gave a *cachet* to a form of domestic art practiced and taught by the ladies of the period.

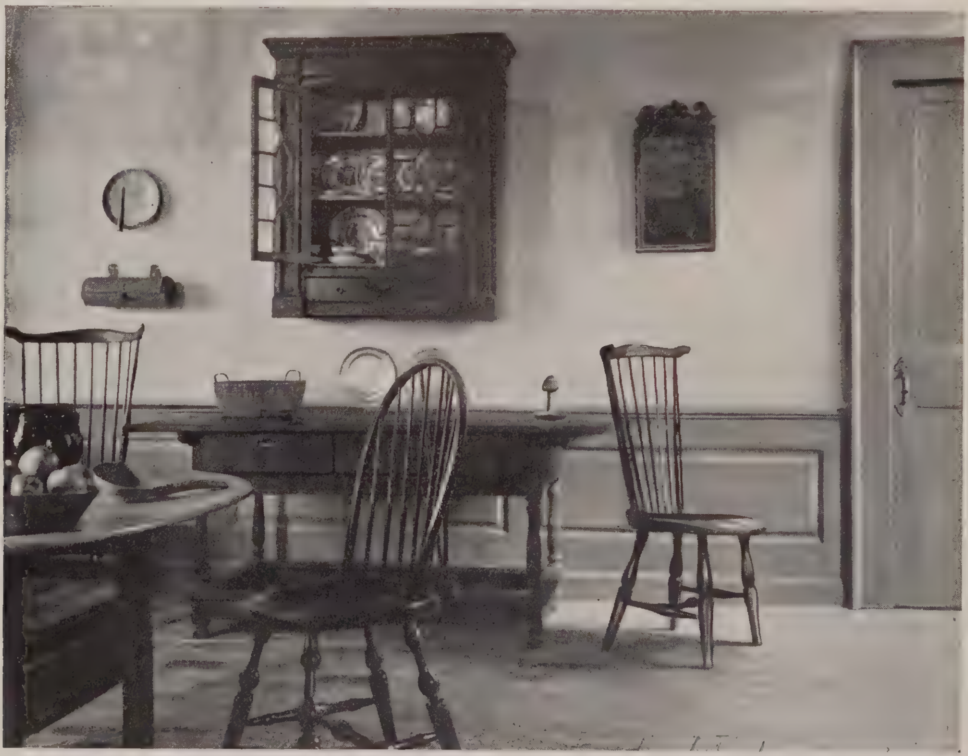
Textiles. England at the time of Queen Anne had splendid silks, velvets, damasks and other textiles, both of English make and imported. Spitalfields was a famous center of fine weaving. Our eighteenth century ancestors were fond of color, and fine costume in America was little short of gorgeous. Even in the seventeenth century there was cause for preaching and lawmaking against "excess in bootes, ribbonds, gould and silver lace" and other "wicked apparel."

In Conclusion. Owing to the simplicity of architectural background and the lack of visual evidence as to what old rooms were at their best, does it not seem possible that our general impression of eighteenth century interiors needs touching up in color?

The claims of this early work on our attention are modest. It was all essentially domestic and intimate, and granting that it was a restrained expression as compared with contemporary European arts, we are inclined to feel that there was a large measure of beauty in it. It was their unassuming way to make the things of everyday life with real qualities of design and craftsmanship. Life and art were truly wedded. Here in the eighteenth century there was perennial growth in an accepted style, and that must have special meaning for us in the midst of annual fashions and "the last word."



High Chest of Drawers *circa* 1725
Japanned Surface Decoration



Interior as Lately Furnished in the Webb House, Wethersfield, Conn.

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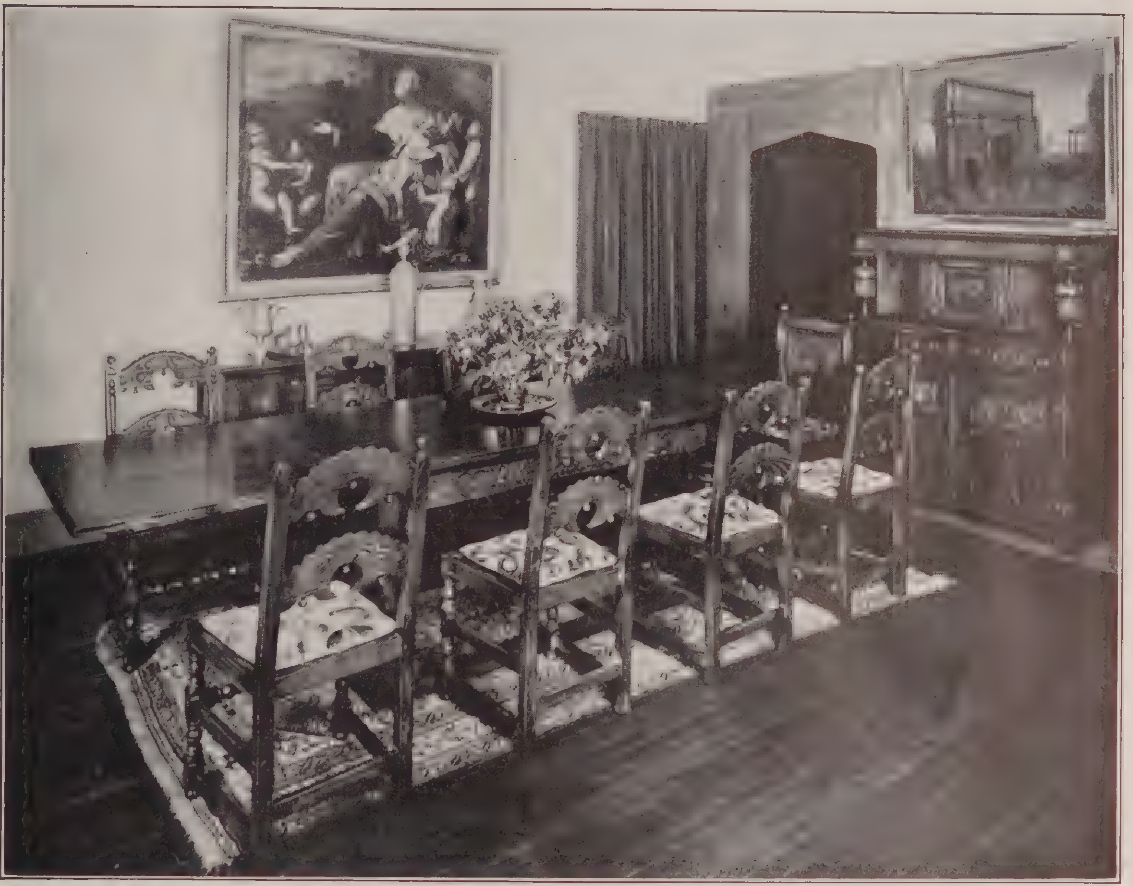
KENSINGTON FURNITURE



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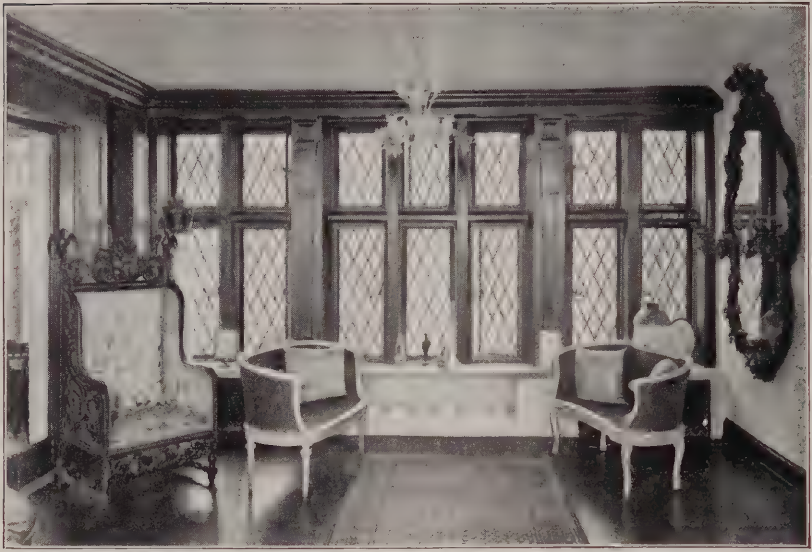

Residence of Mr. E. H. Butler, Grosse Pointe, Mich.
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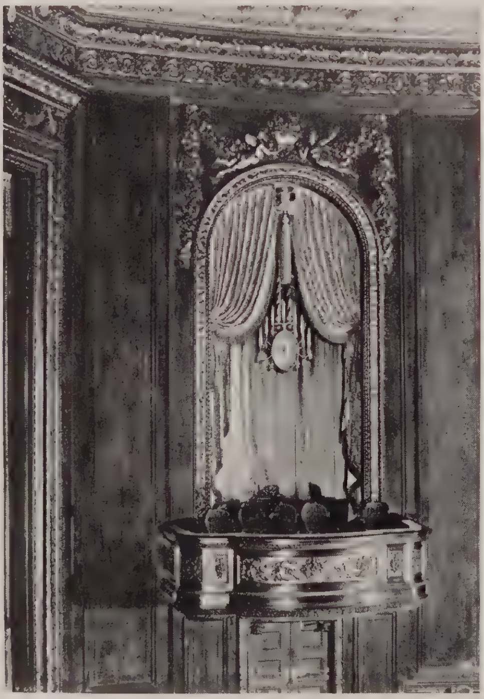

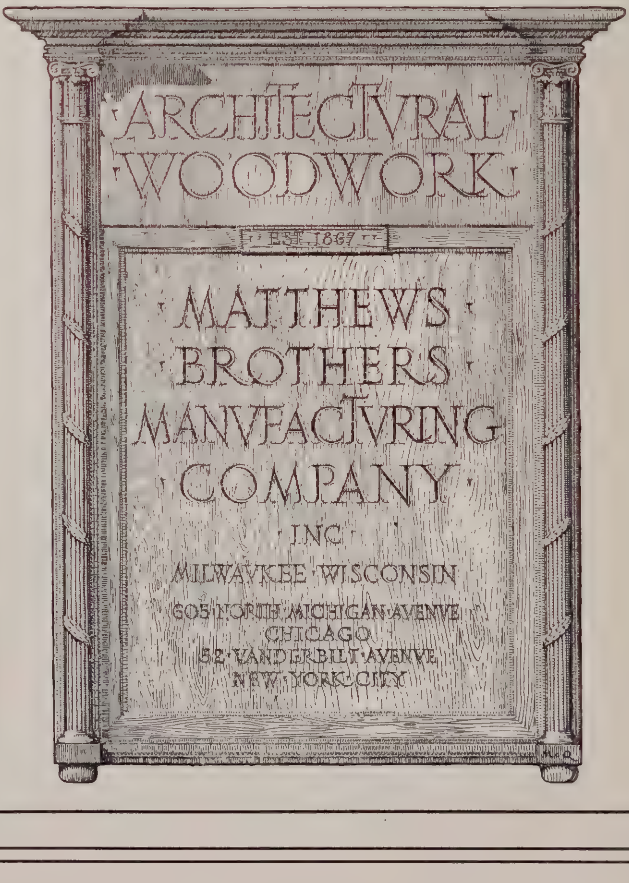

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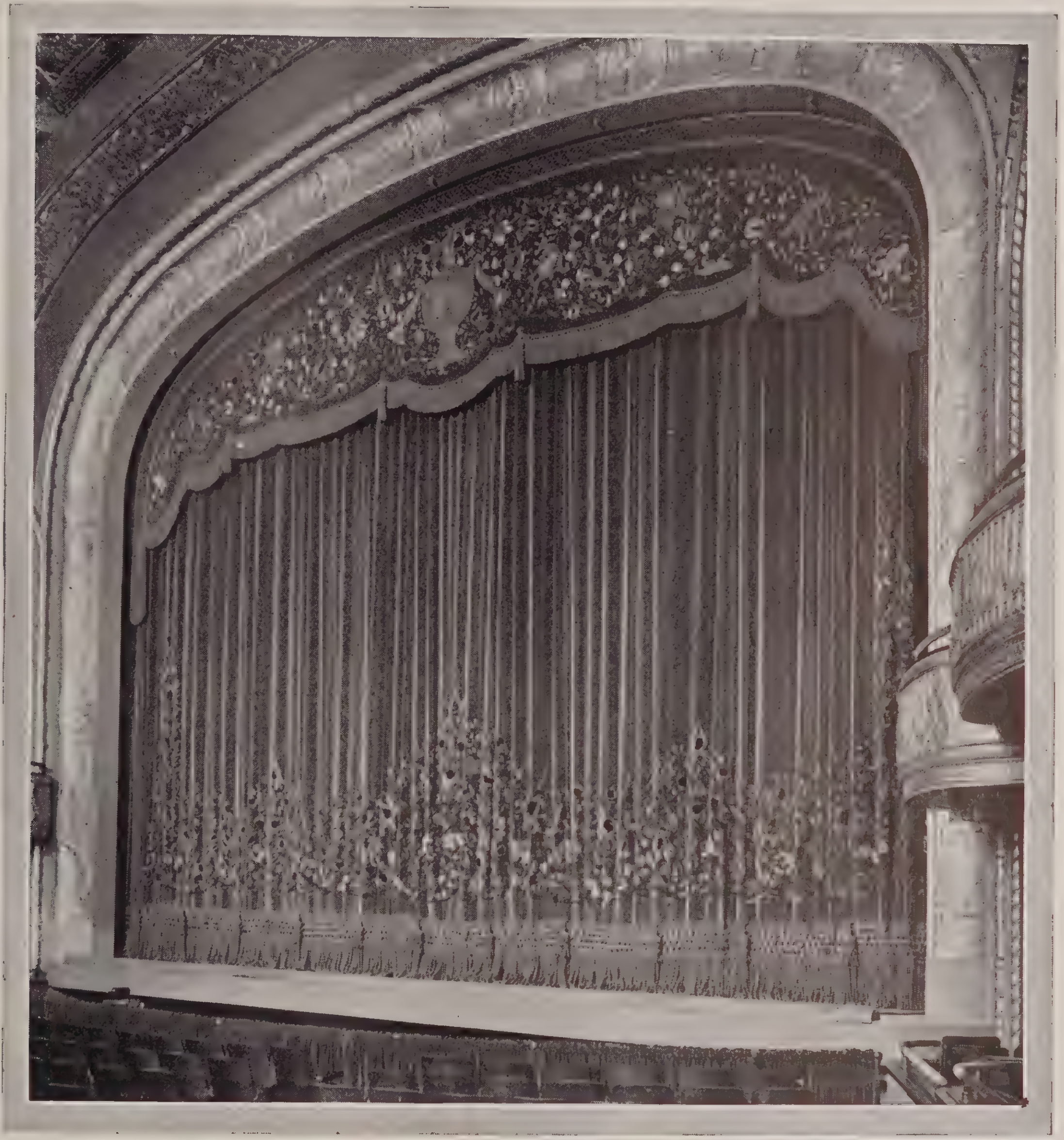

Courtesy of William D. McCann, Decorator

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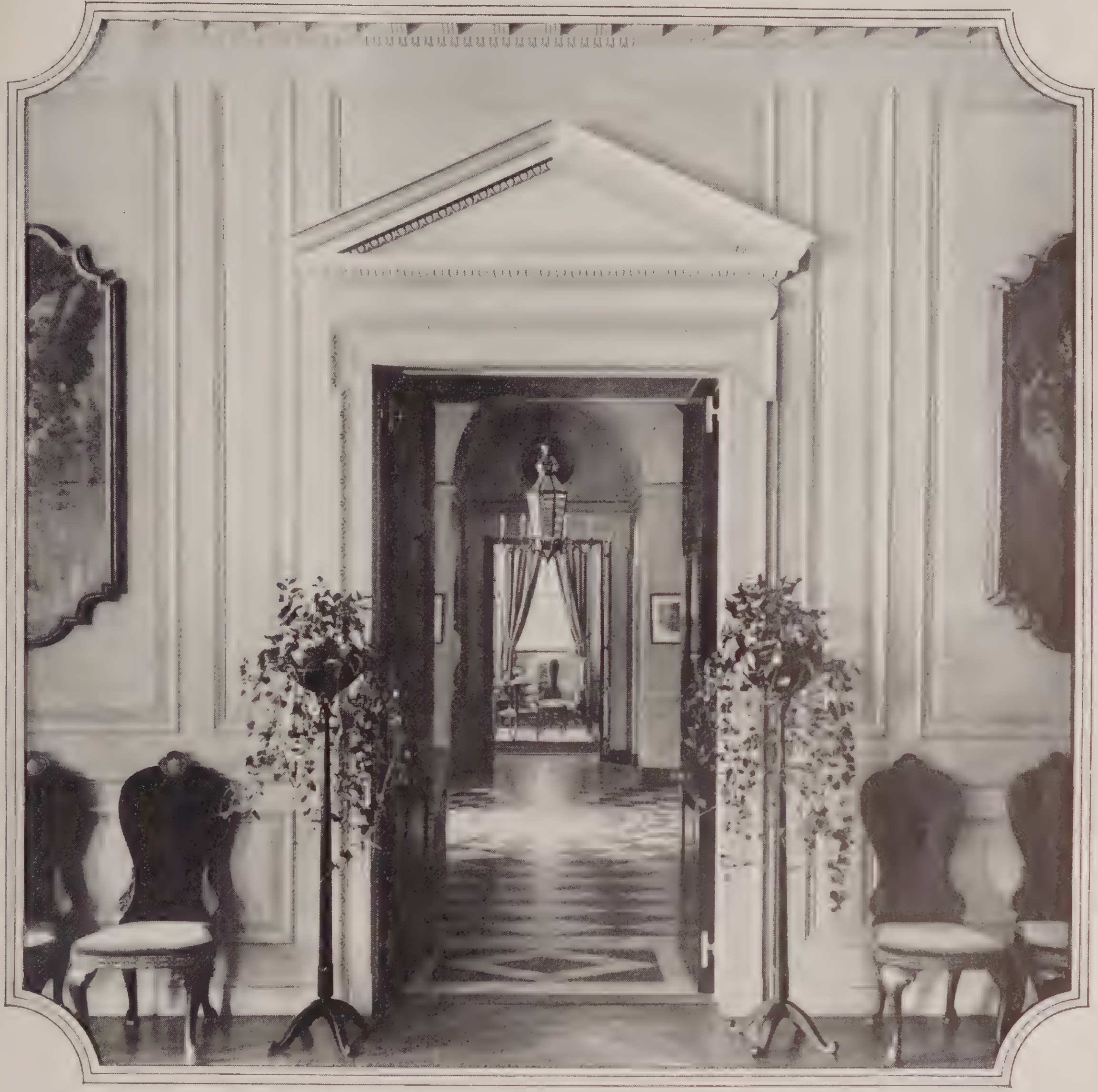

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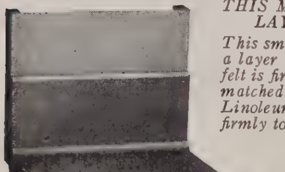
Glencoe, Ill., Residence of R. A. S. Johnson. Built 1921. 2000 sq. ft. Armstrong's A gauge Brown Jaspe Linoleum laid by O. W. Richardson & Co., Chicago. Cemented over felt lining. For Specifications, see Sweet's Architectural Catalog, Seventeenth Edition, or the American Architect's Specification Manual.



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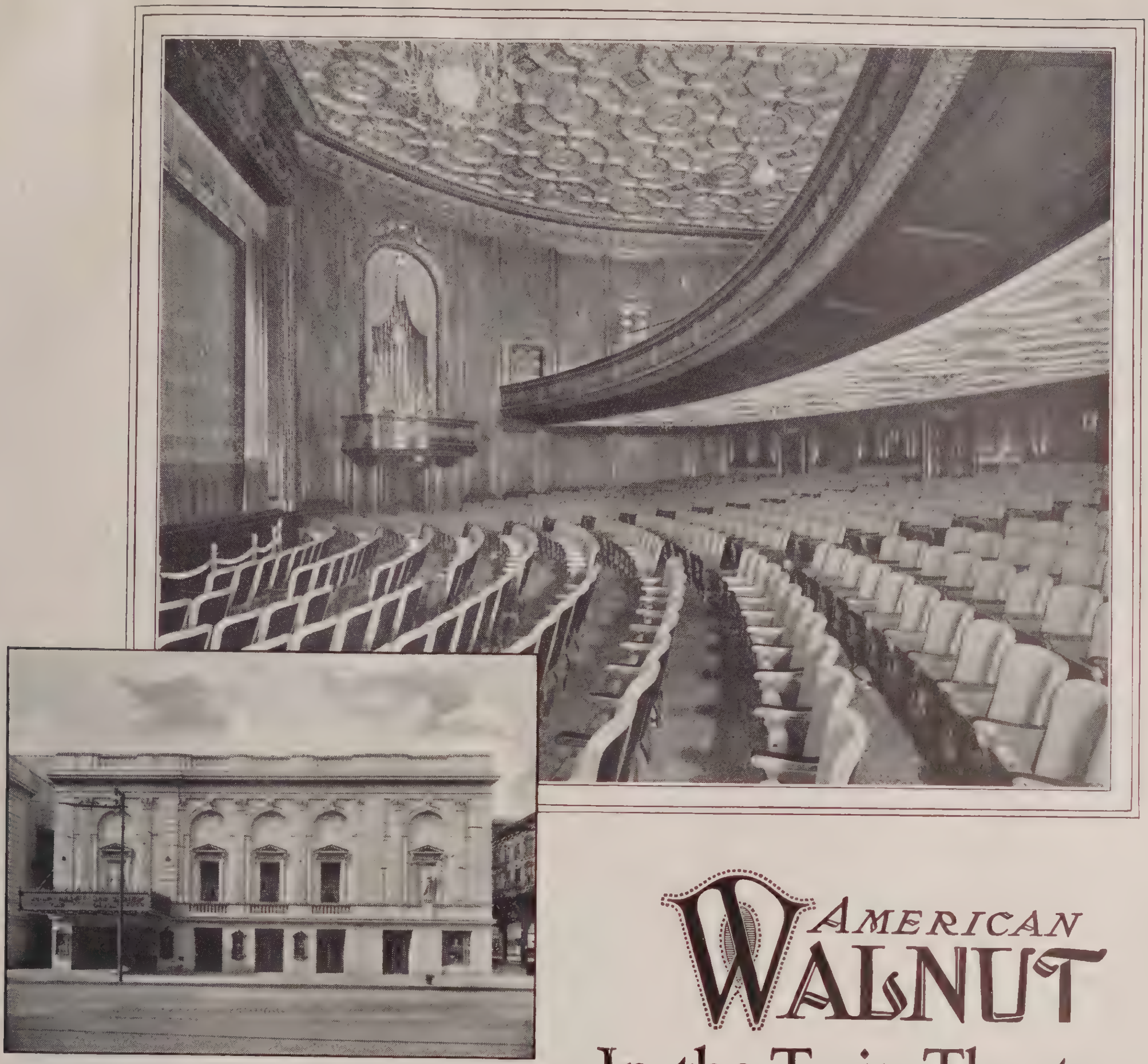

SELWYN THEATRE

Architects
C. Howard Crane
Kenneth Franzheim

Woodwork
Matthews Bros., Milwaukee

Photographs
Fowler, Chicago

AMERICAN WALNUT

In the Twin Theatres

THE recently completed Selwyn and Harris Theatres, Chicago, twin structures standing side by side, elicit the admiration of theatre goers and mark a new era of beauty in theatre architecture. Both interiors are finished in American Walnut throughout.

The auditorium of the Selwyn, illustrated above, while Georgian in its general character, reflecting the influence of Grinling Gibbons, has a pleasing freedom from rigid period exactness, giving an air of quiet genuineness in harmony with the represented period. The entire walls are of the finest American Walnut specially selected for grain and texture, in large panels, devoid of carving, the effect being achieved by the beauty of the wood itself. In contrast to the soft brown tone of the walls, the ceiling is an elaborate coffered pattern, executed in antique gold and subdued greens, as though mellowed by the patina of time. In the lounge the walls are paneled in the same walnut, a simple groined ceiling being frescoed with vignetted figures and medallions.

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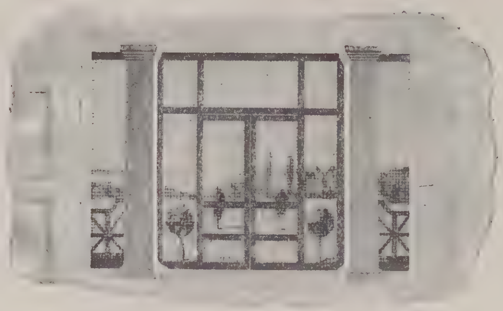

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COPPER
DUPLEX (double galvanized)
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Master Varnish is absolutely water, weather and mar proof. It will stand every test that any other varnish will and many that other varnishes cannot stand.

Let us send you a sample sufficient to finish a table or chair on which you can make any test you want.

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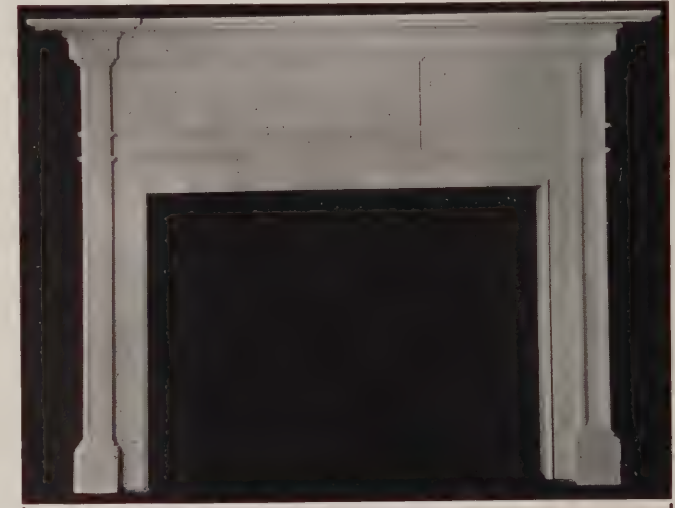
Established 1844 Incorporated 1920



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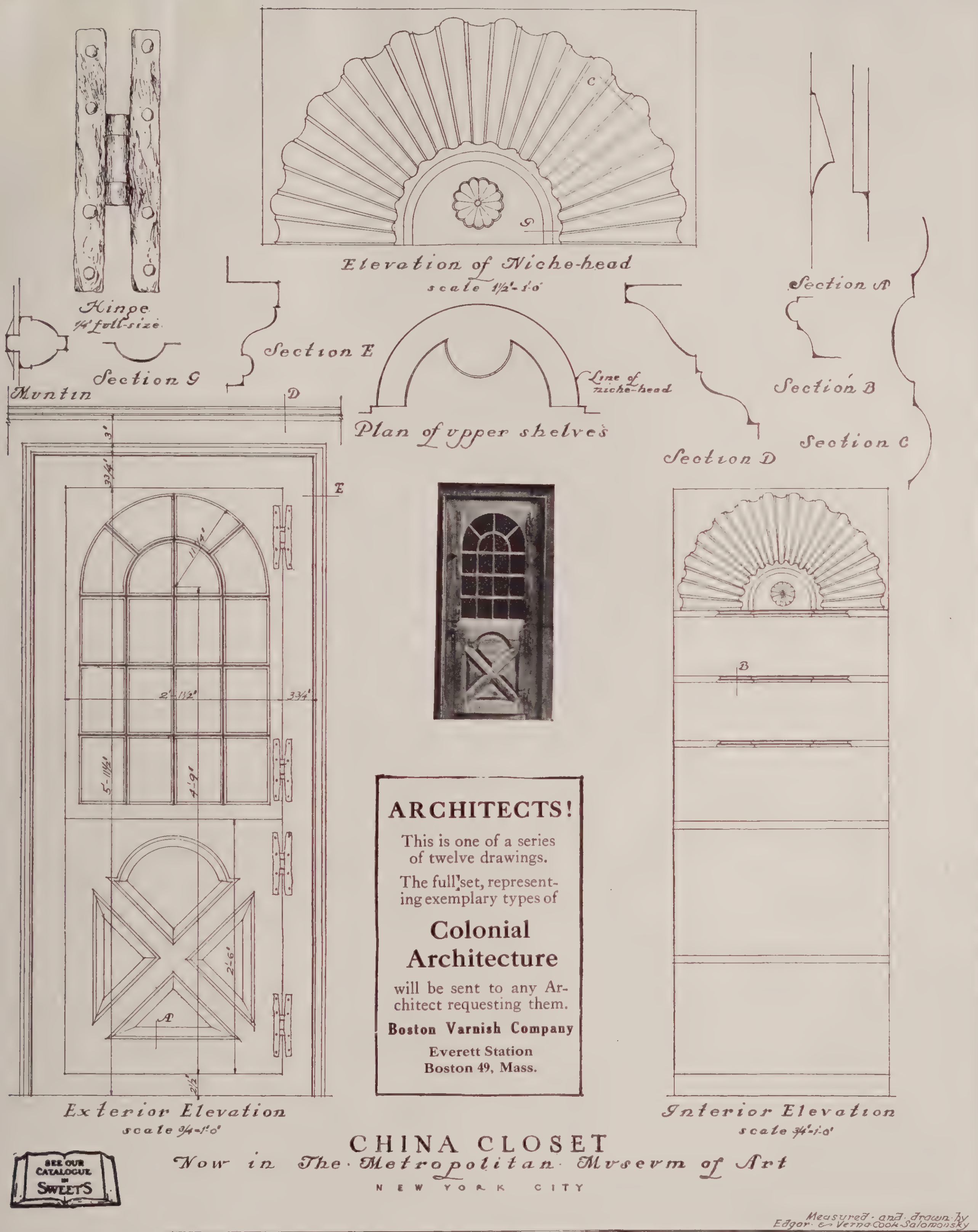

CHINA CLOSET

Now in The Metropolitan Museum of Art

NEW YORK CITY

Measured and drawn by Edgar & Verna Cook Salomonsky

ARCHITECTS!

This is one of a series of twelve drawings.

The full set, representing exemplary types of

Colonial Architecture

will be sent to any Architect requesting them.

Boston Varnish Company

Everett Station
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WHITE ENAMEL
SERIES · OF · MEASURED · DRAWINGS

SHEET
NO. 2

The Triumph Line of Standardized Panel Boards

Safety Type

BULLETIN No 29
Type "P"
The Triumph Residence Safety Type Panel Board
FA
Triumph
The Greatest Triumph in Panel Board History...

From the User's Viewpoint

To successfully design a series of panel boards from the user's viewpoint of what a panel board should be, including in them the architect's requirements of satisfactory service and the contractor's need of low cost installation, is an achievement possible only to a manufacturer who, by experience, knows all angles of panel board construction.

Type T-P

Plug fused; tumbler switch controlled branches; safety, with one door opening.

Type P

Plug fused branches. An extremely narrow panel board safety type.

Type R

Safety type Residence panel board, to meet two and three wire requirements, with or without main switch.

The (FA) Triumph Line of Safety Type Panel Boards is the present day perfection for this form of equipment. Obtaining safety by the simplest construction, and highly standardized even to the individual units, they contain all of the thought and study of Frank Adam Electric Company who long ago achieved leadership in the panel board field.

As the panel board is the most important unit of any wiring installation, and the only one that is in view when the job is finished, special consideration should be given it.

The three bulletins illustrated above explain in detail the present types of Triumph Panel Boards. They will be gladly sent upon request.

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ELECTRIC COMPANY
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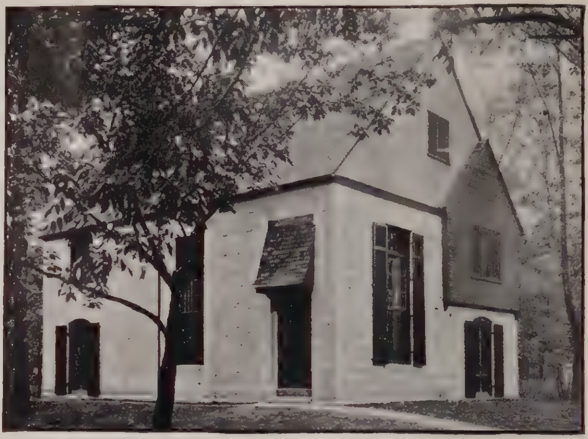
Other (FA) *Products:*

Major System of Theater Lighting Control; knife switches; safety switches; hanger outlets; reversible-cover floor boxes; A. C. and D. C. Distribution Switchboards.



Clark & Walcott, Architects, Chicago

Unique Small Houses

Chicago architects are producing many unusual small houses, of which the above is a striking example, especially in its original color-scheme, which is as follows:

WALLS: Common Chicago brick, laid rough, finished with two coats of Cabot's Old Virginia White.

GABLES: Stucco finished with Cabot's Old Virginia White, and wood stained with Cabot's Creosote Stain, black.

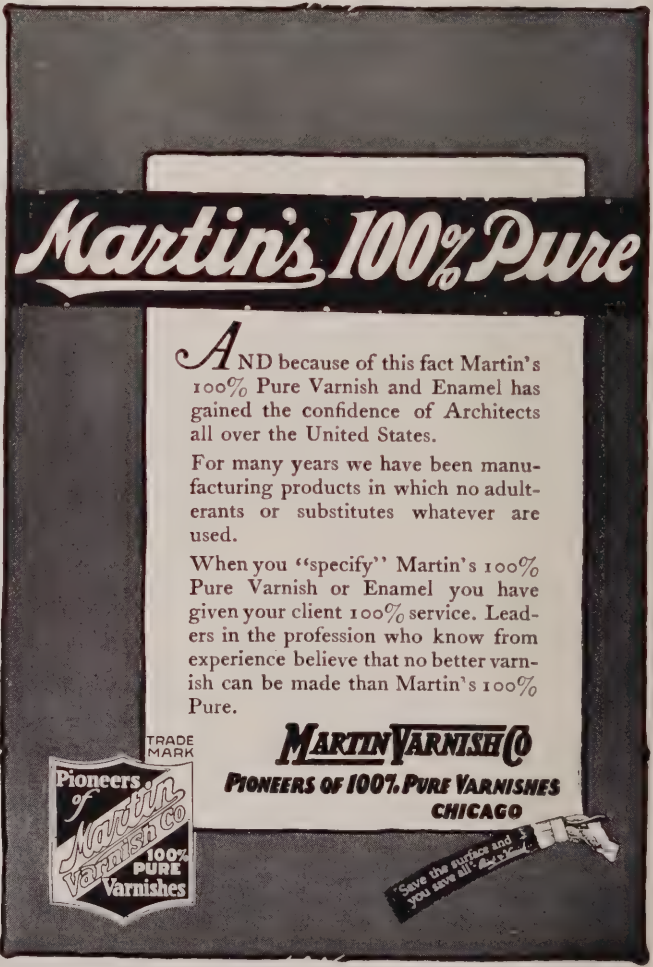
ROOFS: Shingles stained in mottled coloring effect with Cabot's Creosote Stains.

Full information sent on request

SAMUEL CABOT, INC. Manufacturing Chemists **BOSTON, MASS.**

342 Madison Ave., NEW YORK 24 West Kinzie St., CHICAGO
525 Market St., SAN FRANCISCO 331 E. 4th St., LOS ANGELES

Cabot's Creosote Stains, Old Virginia White and Tints, Double White, Stucco and Brick Stains, Conservo Wood Preservative, etc.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TRADE MARK
Pioneers of Martin Varnish Co 100% PURE Varnishes
Save the surface and you save all

AND because of this fact Martin's 100% Pure Varnish and Enamel has gained the confidence of Architects all over the United States.

For many years we have been manufacturing products in which no adulterants or substitutes whatever are used.

When you "specify" Martin's 100% Pure Varnish or Enamel you have given your client 100% service. Leaders in the profession who know from experience believe that no better varnish can be made than Martin's 100% Pure.

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PIONEERS OF 100% PURE VARNISHES
CHICAGO

Suburban home equipped throughout with G-E Wiring Devices, Schenectady, N. Y., David Lockerby, Architect

Convenience Without Sacrificing Beauty

THE modern architect is called upon to provide maximum convenience and still preserve beauty of interior. The G-E Twin Convenience Outlet helps him to do both.

This double outlet facilitates the use of decorative lamps and eliminates the necessity of long connecting cords from wall or ceiling fixtures. Thus the beauty of any room is retained as it was originally designed.

To satisfy the client's desire for plenty of outlets, the architect should plan accordingly and make allowance for an increasing use of electricity. With G-E Twin Convenience Outlets in every room, the usefulness of the wiring installation is doubled without sacrifice of artistic effect by overcrowding outlets.

G-E National Advertising to prospective home builders is creating a new appreciation of the comforts of a completely wired home—stimulating desire for added refinements.

G-E RELIABLE WIRING DEVICES
can be furnished by any qualified electrical contractor

For information address
Merchandise Department, General Electric Company, Bridgeport, Conn.

General Electric Company

General Office
Schenectady, N.Y.

Sales Offices in
all large cities

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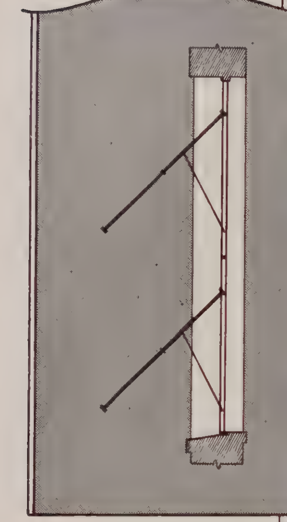
ARCHITECTURAL



"For the past eight years we have used Fenestra exclusively and have lately installed Fenestra Reversible Windows in the McKinley School at Stockton. We are very well pleased with this installation."
—*H. Y. Davis.*

McKinley School, Stockton, Calif. *Architects,* Davis, Heller, Pearce Co., Stockton, Calif.
Contractors, Shepherd & Riley, Stockton, Calif.

MUCH more than the demands of sound construction are met by Architectural Fenestra. In the hands of the architect these modern steel windows present many new opportunities for the exercise of artistic ability. Whenever used, it makes a definite contribution to the beauty of architectural design.

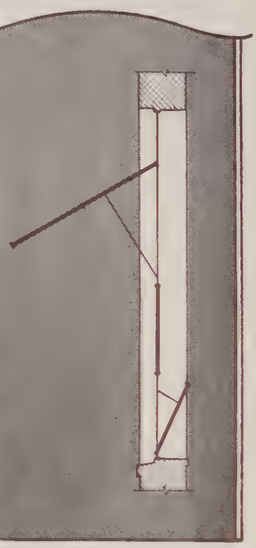
The beauty of Architectural Fenestra is the beauty of tracery. It is through the tracery of its steel members and the interesting reflections from its individual panes that it gives added attraction to the most carefully designed windows. The heavy, cumbersome members of wood sash are replaced by muntins built in slender and graceful lines.

Architectural Fenestra includes Fenestra Reversible Windows—a new type as practical as it is beautiful. Ventilators open to any angle without chains or stays. Hardware is artistically designed in bronze. The jam member is designed to permit an attractive plaster finish. The cost of Fenestra Reversible Windows is surprisingly low and upkeep is reduced to a minimum.

DETROIT STEEL PRODUCTS COMPANY
Division of Architectural Construction
2001 East Grand Boulevard Detroit, Mich.

Fenestra
Steel WindoWalls

FENESTRA



"You may say for us that the reversible type of steel window is very satisfactory to the Board of Education and to the school faculty, especially in the feature which permits the lower portion of the sash to swing in and thus deflect air currents over the heads of the pupils."—*Walter G. Schaeffer.*

Jackson Grade School, Dayton, Ohio. *Architects,* Gebhart & Schaeffer, Dayton, Ohio. *Contractors,* Drummond Miller Company, Cleveland, Ohio.

AFTER satisfying the architect from design and construction standpoints, Architectural Fenestra has very decided advantages for the owner.

The Fenestra Reversible type supplies 20% to 30% more light than wood sash. It absolutely controls ventilation, and performs this service with the greatest ease of operation. Made from rolled sections of solid steel, it is durable and fire-resisting. Warping, swelling and sticking are eliminated. The ventilators, reversible for washing, project either entirely outside or entirely inside the plane of the window, thus simplifying screening and shading. Sill ventilators, opening in, take the place of wind guards. Small glass lights minimize the cost of replacing broken panes.

Surely, these are points of practical service, which should influence the architect's choice.

Typical installations of Architectural Fenestra are shown above with cross-sectional drawings of each. Specifications and special architectural literature will be sent gladly upon request.

DETROIT STEEL PRODUCTS COMPANY
Division of Architectural Construction
2001 East Grand Boulevard Detroit, Mich.

Fenestra
Steel WindoWalls

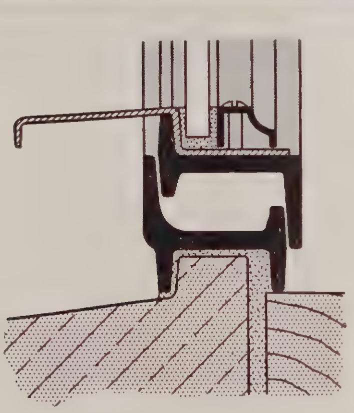
Casements

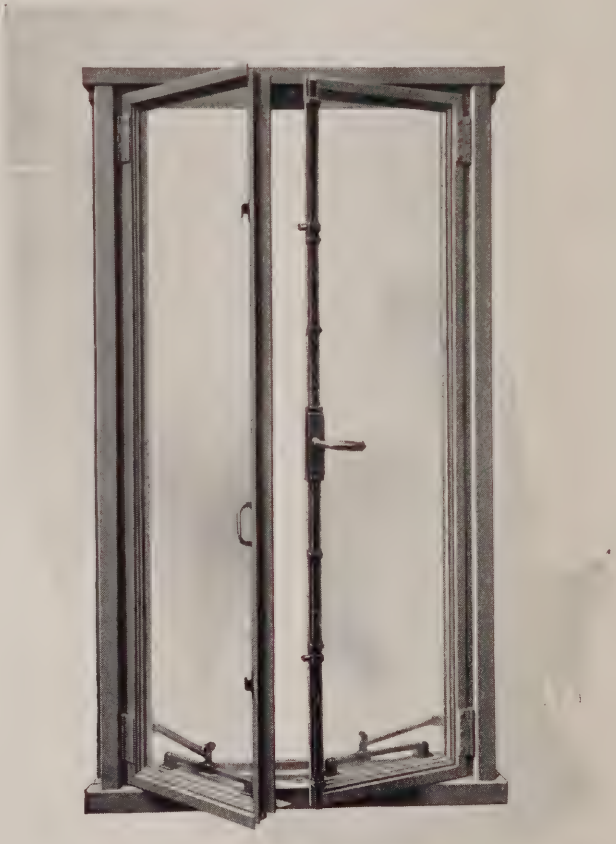
In Lupton Casements, European artistry is combined with the American conception of exact, interchangeable manufacture.

The unusual accuracy and close fit of Lupton Casements are due to the use of exact tools, gauges and fixtures, leaving minimum reliance on hand fitting.

Lupton Casements are better for the same reason that American typewriters, machine tools and automobiles are better.

See Catalogue, "Lupton Casements and Double Hung Windows"—in your files.





Lupton

Steel Casements

Steel Windows
for all types
of buildings

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Lupton

INVESTMENT VALUE

HIGGIN ALL METAL WEATHER STRIPS

Doorway of residence by G. C. Burroughs and J. H. Deeken, Architects, Cincinnati, constructed for Robt. H. Black, Walnut Hills, Cincinnati. Higgin All-Metal Weatherstrips and Screens throughout.

Higgin All-Metal Weatherstrips are Specified for Well-Planned Homes

Higgin All-Metal Weatherstrips make homes comfortable. They make doors and windows absolutely tight against seepage of air. Cold air can't get in. Warm air can't get out.

Higgin All-Metal Weatherstrips place no restrictions whatever upon architectural treatment.

They are as durable as the woodwork itself.

Higgin Service-men and fitters are prepared to ably advise you on any phase of screening and weatherstripping for all residence, factory and office-building construction. There is a Higgin service-office convenient to you. *Let it serve you.*

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Toronto, Canada.

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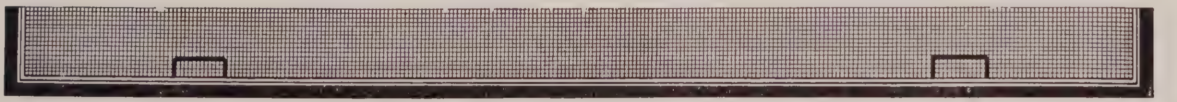

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In planning Industrial Buildings, or in remodeling them, it is well to keep in mind that the present cycle of business is a highly competitive one. Manufacturers must be equipped for manufacturing with a higher degree of efficiency and for maintaining more uniform quality. In many industries this presupposes the installation of adequate Laboratory Equipment.

Because of our line of over five hundred standardized designs it is seldom necessary to plan special equipment if you choose Kewaunee. You will find that we have already met nearly every possible laboratory need with a standard desk, table, bench or sink.

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WHITE HOUSE Arguments—Number One

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"WHITE HOUSE" equipment is manufactured in a Unit System in a number of sizes, the variety of which enables us to fill in practically any given space by combining units.

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It is a fireproof, warm, resilient, attractive composition flooring which is manufactured and installed by us. We assume all responsibility and further give a strong guarantee which protects the architect's judgment in specifying it. If you are interested in its application to any special type of building, write us for list of similar installations, samples, specification, etc. Also see Sweet's.

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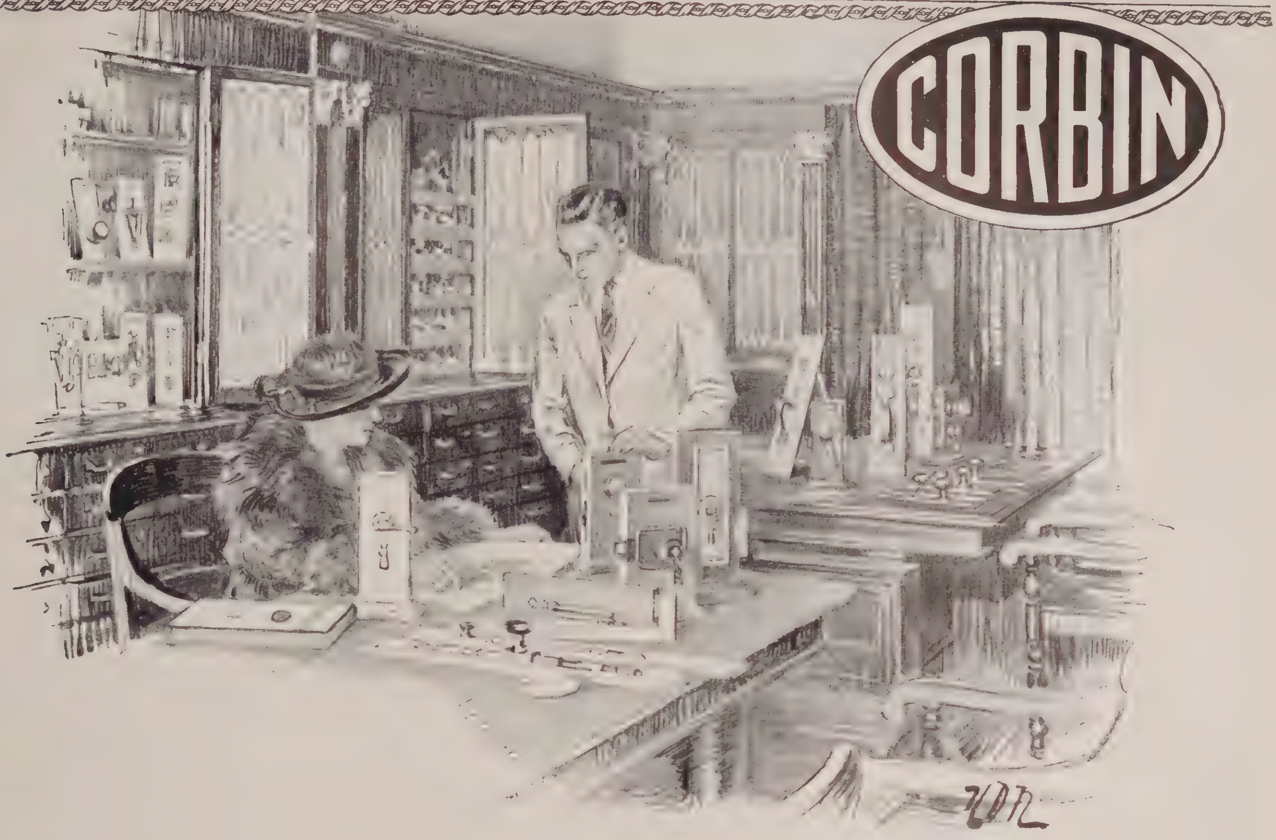
The Universal **FLOORING**
for Modern Buildings

Good Buildings Deserve Good Hardware

CORBIN



Visit Good Hardware Headquarters and bring your clients with you

Every Corbin Builders' Hardware Department (in leading hardware stores) is Good Hardware Headquarters. In addition, P. & F. Corbin maintains Display Rooms at

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At the plant of P. & F. Corbin.

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Architects' Building, Park Avenue and 40th Street, two short blocks from Grand Central Terminal.

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CHICAGO
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THAT doesn't mean, come to New Britain, Connecticut, if you are not near by.

It means, visit the Builders' Hardware Department of the nearest Corbin dealer—usually the leading hardware store in town.

It means, visit the display rooms of P. & F. Corbin in New York, Chicago or Philadelphia—if this is practicable.

A few hours spent in any Corbin Display Room is a liberal education in Good Hardware. It brings your clients in touch with Builders' Hardware specialists. It enables them to make their selections from a wide range of designs.

Impress on your clients the fact that no matter how modest a home is to be, it is false economy to slight the hardware. Make them understand that much of the comfort and enjoyment they will get from their home depends on the character of hardware they select. Discourage last-minute buying. It's a mistake that proves costly to many.

Urge your clients to visit Good Hardware Headquarters as the first step toward providing Good Hardware for their homes.

P. & F. CORBIN SINCE 1849 NEW BRITAIN CONNECTICUT
The American Hardware Corporation, Successor
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Residence in Country Club District of Kansas City. Redwood siding painted white. Selby H. Kurfiss, Architect.

Century Old Church at Fort Ross, Cal. Built entirely of Redwood.

In Use Over 100 Years Redwood Remains Sound

THIS quaint church was first built of Redwood by Russian settlers at Fort Ross, California, over a century ago. In 1915 it was rebuilt using the original Redwood lumber which was sound and usable after generations of exposure to sun and rain.

For exterior construction and for those parts of the house that are in contact with soil moisture, Redwood gives exceptional service. It is permeated during centuries of growth with a *natural*, odorless preservative which protects it against all forms of rot and decay and against insect activity. Containing no pitch or resin, Redwood reduces the fire hazard wherever used.

For shingles, siding, trim, porch columns and timbers, railings and balusters, gutters and lattice work—wherever wood must have great durability in contact with ground moisture or exposure to climatic changes—Redwood insures the utmost permanence and beauty with lowest costs for painting and repairs.

For the convenience of architects we have compiled our "Construction Digest", containing information which should prove helpful in specifying Redwood for many purposes. On your request we will gladly send you a copy together with any additional information which you may desire.

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LOS ANGELES
Central Bldg., 6th and Main Sts.
PACIFIC LUMBER CO.

T P L C
The Pacific Lumber Co.
Redwood
The Largest Manufacturers and Distributors of California Redwood

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S C M A No. of Mill
TRADE MARK REG. U.S. PAT. OFFICE

Cypress Lasts

FOR GENERAL OUTDOOR USE, for all structural parts of residences and outbuildings whose owners appreciate minimum repair bills, use "Tidewater" Cypress. It has very high resistance to rot.

FOR USES WHICH ESPECIALLY INVITE DECAY, it is worth while to insist upon ALL-HEART "Tidewater" Cypress. It has SUPERLATIVE RESISTANCE TO ROT.

FOR IDENTIFICATION OF "TIDEWATER" CYPRESS the Arrow trade-mark (above) is stamped in the end of every piece or on every bundle. Only members of the undersigned Association may use this brand and none but responsible manufacturers of "Tidewater" Cypress may be or become members. "Signed lumber is Safe lumber."

Communicate with our "ARCHITECTS' DEPARTMENT." Our entire resources are at your service with Reliable Data.

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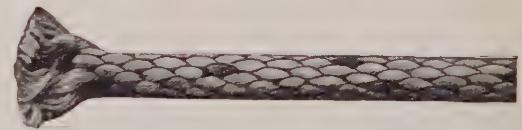
INSIST ON TRADE-MARKED CYPRESS AT YOUR LUMBER DEALER'S. IF HE HASN'T IT, **LET US KNOW IMMEDIATELY.**

Samson Spot Sash Cord

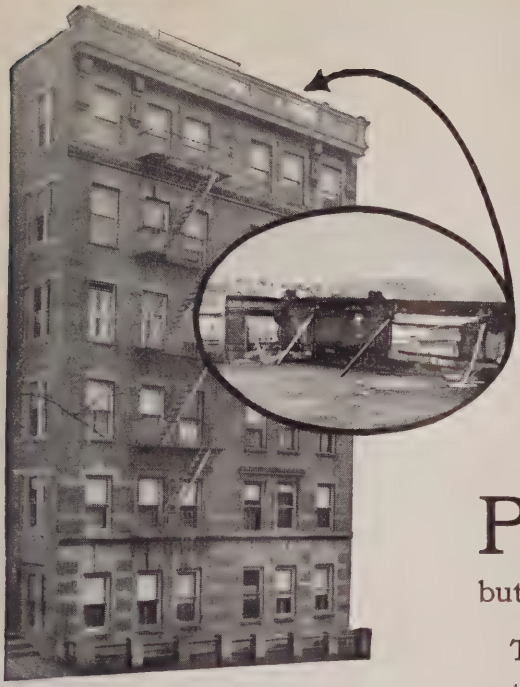


Made of extra quality stock, carefully inspected, and guaranteed free from all imperfections of braid or finish. Can be distinguished at a glance from common cord by our trade mark, the Colored Spots.

Samson Wire Center Sash Cord

For heavy windows, or where for any reason a metallic device is required. A special quality enameled steel wire cable, with a braided cotton cover of the same quality as Spot Sash Cord with the same trade mark. Many times more durable than unprotected metallic devices, noiseless and attractive in appearance. Send for tests, samples and full information.

Samson Cordage Works
Boston, Mass.



Cities are full of the remains of cornices such as illustrated above. Needless to say, they are not Copper.

Unsightly, Expensive Cornices Being Replaced with COPPER

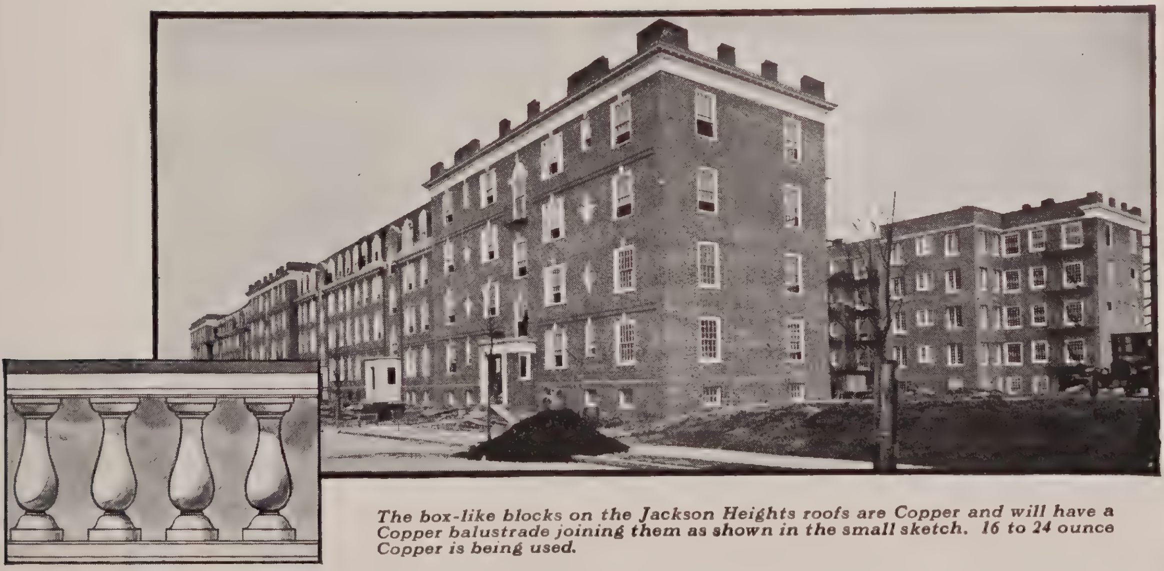
PROPERTY owners have tired of paying for cornices made of inferior metals of which nothing but a rusty skeleton remains at the end of a few years.

That is why Copper is returning so rapidly to favor, not only for cornices, but also for roofing, flashings, leaders and gutters.

The new Jackson Heights apartments near Long Island City typify the way in which Copper is being used, not only to obtain permanent protection from the weather, but also for its pleasing appearance.

Copper lasts as long as the building itself. Substitutes soon rot and hasten depreciation of property values.

COPPER & BRASS
RESEARCH ASSOCIATION
25 Broadway - New York



The box-like blocks on the Jackson Heights roofs are Copper and will have a Copper balustrade joining them as shown in the small sketch. 16 to 24 ounce Copper is being used.

Building in 1923

BILLIONS of dollars of new construction work is planned for 1923, further to remedy the nation-wide building shortage. This means business for the architectural profession, after the construction projects are financed.

S. W. Straus & Co. stand ready to aid in such financing. We are always in the market for sound construction loans in amounts of $200,000 up, to finance office buildings, apartment buildings, and similar structures.

We suggest that you write today for the booklet which we have prepared especially for architects, outlining the Straus Plan of financing in full detail. Ask for

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SERVICE SECTION
of THE ARCHITECTURAL FORUM

Information on economic aspects of construction and direct service for architects on subjects allied to building, through members of THE FORUM Consultation Committee

The Building Situation

ON page 9 of this issue will be found an article which gives a general survey of the building situation during 1922 and a forecast of building activity for 1923. The monthly trend and volume and investment charts usually appearing on this page will be found incorporated in that article.

At the present time two questions are particularly interesting to architects and to builders throughout the country. These are the questions of labor supply and rates and the condition of material stocks.

In order to indicate the labor and material stock situation there will be found in the following paragraphs a review and on this page a tabulation of labor rates and conditions throughout the country and conditions of materials stocks in important centers as taken from office reports by *Engineering News-Record.* The condition of stocks of several basic materials in a number of important centers throughout the country is indicated, and by comparison with the information given it is possible to develop an approximate idea of conditions in various localities of which these cities are centers.

The tabulation of labor rates provides a close approximation of labor costs on various projects under consideration for immediate construction. It will be noted that the cost of common labor has increased materially throughout the country during the past few months. It is an undisputed fact that industrial conditions are steadily improving

Labor Rates in Various Important Centers

Reproduced from *Engineering News-Record,* December 7, 1922

Cities	Bricklayers	Carpenters	Hoisting Engineers	Hod Carriers	Pile Drivers	Structural Iron Workers	Common Labor
Atlanta	$0.90	$0.70	$0.70	$0.30	....	$0.65	$0.30@.35
Baltimore	1.25	.80	.87½@.90	.60@.75	$0.75	1.00	.35@.40
Birmingham	1.00	.75	.50@1.00	.15@.25	....	1.00	.20@.25
Boston	1.25	1.00	.90@1.00	.75@.80	1.00	1.00	.50@.55
Cincinnati	1.35	.95	.95	.72½	....	.95	.35@.40
Chicago	1.10	1.00	1.10	.....	1.10	1.05	.72½
Cleveland	1.25	1.10	1.10	.75	.91	1.10	.75
Dallas	1.37½	1.00	1.00	.40	.87½	1.00	.30@.50
Denver	1.25	1.00	1.00	.75@.81¼	1.00	1.03⅛	.35@.50
Detroit	1.12½	.80	.80@.90	.50@.60	1.00	.60@.80	.50
Kansas City	1.12½	1.00	1.00	.80	1.00	1.07½	.40@.50
Los Angeles	1.25	1.00	1.00	1.12½	.87½	1.00	.56¼@.62½
Minneapolis	1.00	.80	.80	.65	....	.80	.35@.50
Montreal	.90	.65	.50	.35	.50	.65	.30@.35
New Orleans	1.00	.85	.90	.65	.80	1.00	.35@.40
New York	1.25	1.12½	1.25	.87½	1.00	1.12½	.45@.60
Philadelphia	1.25	.90@1.00	.90@1.00	.75@.90	1.00	.90@1.00	.35@.45
Pittsburgh	1.30	1.12½	1.00	.90	1.00	1.00	.50
St. Louis	1.25	1.10	1.12½	.85	1.12	1.12½	.35@.45
San Francisco	1.12½	1.00	1.00	.75	1.00	1.12½	.47½@.50
Seattle	1.00	.80	.90	.70	1.00	.80@.90	.50@.60

Conditions of Material Stocks in Important Centers

Reproduced from *Engineering News-Record*

Stocks on hand in approximate figures, example: (cement, Minneapolis, 20,000 bbl.); time required for delivery of carload lots to city job, example: (sewer pipe, Atlanta, 6 @ 8 days); and stocks on hand in general terms, example: (common brick, Philadelphia, no surplus).

	San Francisco	Denver	Minneapolis	Detroit	New Orleans	Atlanta	Philadelphia	New York	Montreal
Sewer pipe	Plenty	Del. 24 hr., local plant	Improved	Small but sufficient	Stocks fair	Del. take 6 @ 8 days	Stocks depleted	Mill del. better	Ample
Cement	Stocks low	Del. retarded by car shortage	20,000 bbl.	Shortage relieved	Sufficient	20 cars	Supply low; del. slow	No shortage	Plenty
Lime	Fair supply	Plenty	Better than month ago	15 cars	Ample	20 cars	Stocks limited; del. uncertain	Plenty	Well supplied
Common brick	Plentiful	4,000,000	Able to supply all orders	Plenty in local yards	Plentiful	Unlimited	No surplus	Enough for this winter; capacity market	Del. take 7 days
Hollow tile	Enough	Sufficient	Supply no longer limited	Depleted	Enough	Del. take 4 @ 6 days	Del. by rail, slow	Well supplied; del. by water	Short; del. take 3 days
Lumber	Used as fast as it arrives from mills	Complete, all dimensions	About 25 per cent below normal	Structural timber scarce	Production below orders	Plenty pine	Not equal to demand	Mill del. take 7 @ 9 wk. from time order is placed	Retail stocks large
Asphalt	Large stocks, native	About 10 cars	No shortage	Del. take 1 @ 2 days	No market	25 cars	Heavy reserves	Plenty in reserve	....
Structural steel	Low on shapes	No scarcity reported	Notably better than last month	Enough	No shortage	5 cars	Sufficient warehouse stocks	Heavy warehouse stocks; mill del. slow	Well stocked

throughout the country, but wide differences of opinion seem to prevail regarding the labor supply, as will be noted from the reports on the preceding page.

It is anticipated that the general labor situation in the building trades will be better in 1923 than it has been during the latter part of 1922. The possibility of steady work is demonstrated by the large program of prospective building construction, and while there will probably be no decrease in wage rates it is obvious that the amount of production per man will be materially better than in 1921 and probably generally better than in 1922.

Reports received by the National Industrial Conference Board, from the U. S. Department of Labor, state that in 355 industrial centers an increase in employment was noted in twelve of the fourteen industrial groups. According to a survey conducted by the American Federation of Labor, reports of a labor shortage in this country are greatly overestimated. A comparison of excerpts, taken from the respective reports of the two industrial authorities for the same five cities, proves interesting.

Local industrial conditions as reported by *News-Record* correspondents are given as follows:

ATLANTA—Building continues active, with fairly good supply of labor.

BIRMINGHAM—Common labor sufficient but not abundant; awarded advance of 5c. per hour.

BOSTON—Just about enough bricklayers, carpenters and hodcarriers, but not all piledrivers and structural ironworkers employed. Plenty of hoisting engineers, but scarcity of good common laborers.

CINCINNATI—Bricklayers scarce; labor supply normal otherwise.

DALLAS—Plenty of common laborers; hodcarriers fairly plentiful, but limited supply of skilled craftsmen.

DENVER—All trades 100 per cent employed.

KANSAS CITY—Shortage of bricklayers, hodcarriers and carpenters; other trades plentiful.

MONTREAL—Scarcity of bricklayers only.

NEW ORLEANS—Fair supply of labor.

NEW YORK—Armistice declared in dispute between the two building laborers' helpers' unions. The International Union men had refused to use materials handled by members of the Independent Union, which had in turn been sponsored by the employers. Lockwood committee, acting as arbitrator, adjourned until December 12, pending permanent settlement.

ST. LOUIS—Common laborers paid 35c. to 45c. as compared with 30c. to 40c. per hour one month ago.

SAN FRANCISCO—Plenty of work for all trades.

PHILADELPHIA—Demand for labor easing up perceptibly.

AMERICAN FEDERATION REPORT

MILWAUKEE, WIS. There is no industry here that has a shortage of labor.

YOUNGSTOWN, OHIO. This central body reports that steel mills cry labor shortage and force men to undergo a physical examination. Low wages, which make it impossible to live, are the rule. Men appear at the factory gates but are not employed.

DETROIT, MICH. There is a line-up in front of every employment agency in the city. The mission houses are full. More men are seeking employment at local factories than can be used by them. There is a big over-supply of common labor and considerable of a surplus of skilled workers in Detroit.

KENOSHA, WIS. There is unemployment galore and we expect same to be much worse—a month from now.

PITTSBURGH, PA. There is no material labor shortage. This letter states that steel mills shortage is because men refuse to work long hours for low wages. Men are being brought from South, but do not stay.

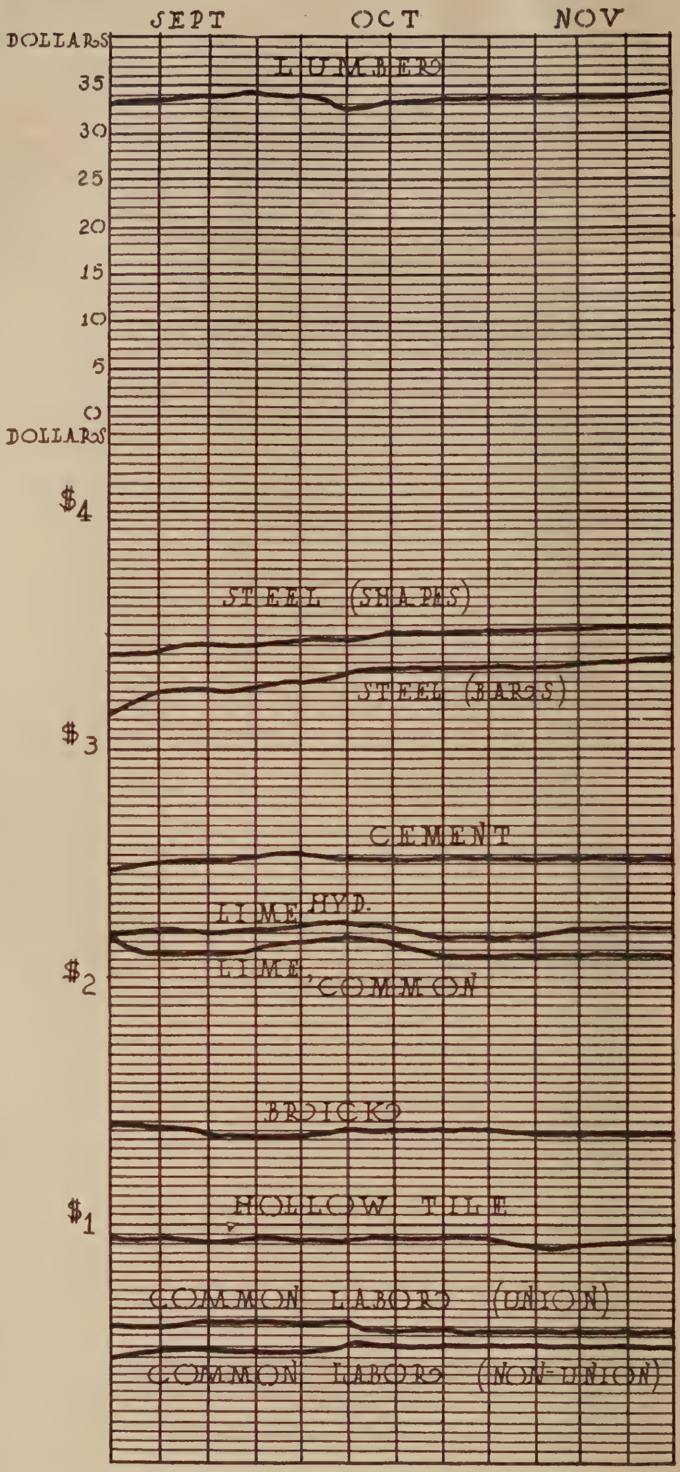
DEPARTMENT OF LABOR REPORT

MILWAUKEE, WIS. Upward trend in employment. Shortage of workers in building trades, machinery and textiles. . . .

YOUNGSTOWN, OHIO. Gradual increase in employment. Shortage of common labor exists, especially in the steel mills. Surplus of helpers, handymen and clerical workers. Demand for farm help fair. . . .

DETROIT, MICH. Employment in industries decidedly improved. Slight shortage of brick masons; no surplus in any lines. . . . Building operations steady. Public improvements increasing. Housing in Detroit not equal to demand.

KENOSHA, WIS. Increase in employment. Shortage of common labor. All plants operating, majority full time.



Figures used in developing all trend lines represent average prices to contractors in following cities: New York, Chicago, Denver, Seattle, Minneapolis, Atlanta, Dallas and San Francisco.

Lumber. Price trend line based on soft wood price index presented by *Lumber*. This indicates price variation of yellow pine, Douglas fir, hemlock, N. C. pine, white pine, cypress and spruce

Steel. Structural shapes, price per 100 lbs. Reinforcing bars, price per 100 lbs.

Cement. Price per bbl. without bags

Lime. Finishing. Hydrated, price per $1/10$ ton. Common lump, price per bbl.

Brick. Common, per 100 delivered

Hollow Tile. Partition, 4 x 12 x 12, per 10 blocks

Common Labor. Union, rate per hour. Non-union, rate per hour

PITTSBURGH, PA., DISTRICT. Demand for mechanics, with the exception of bricklayers and painters, is still in excess of the supply. . . . Iron and steel industry is steadily increasing employment. . . . An acute shortage of common labor persists, mills, factories and construction work making strong demands.

BUILDING MATERIAL PRICES

Table Showing Average Prices Paid by Contractors for Building Materials at Local Distributing Points as of Nov. 1, 1922. Prepared by Division of Building and Housing of the Department of Commerce from Prices Secured through the Bureau of Census

Commodity	Size or Condition	Unit	Mass. Fitchburg	Haverhill	Conn. New London	New York Buffalo	Poughkeepsie	Penn. Pittsburgh	Erie	Md. Baltimore	Va. Richmond	W. Va. Fairmont	S. C. Columbia	Ga. Savannah	Fla. St. Petersburg	Michigan Detroit	Pontiac	Bay City	Saginaw	Wis. Milwaukee
Common Brick		1,000	$21.00	$25.00	.....	$20.12	$18.00	$14.25	$15.75	$20.00	$18.00	$24.00	$12.50	$15.00	$19.00	$16.50	$14.40	$12.50	$18.00	$13.00
Portland Cement	Excl. of containers	Bbl.	3.02	2.90	$3.68	2.78	2.90	3.35	3.20	3.20	3.60	3.10	3.90	4.00	4.00	2.77	.....	3.10	3.25	2.65
Yellow Pine No. 1	Dimension 2x4-16′ S1S1E	M	70.00	63.00	63.00	.....	60.00	52.00	49.00	39.00	40.00	45.00	.....	25.00	.....	55.00	43.00	40.00	53.00	42.00
Douglas Fir No. 1	Dimension 2x4-16′ S1S1E	M	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	44.00
N. Carolina Pine No. 1	Dimension 2x4-16′ S1S1E	M	.....	.....	.....	.....	45.00	.....	49.00	.....	30.00	.....	21.50	20.00	31.00	.....	.....	.....	.....	.....
Common Boards No. 1	1x6	M	57.00	48.00	40.00	.....	36.00	49.00	50.00	.....	33.00	55.00	30.00	.....	31.00	.....	48.00	39.00	.....	37.00
Y. P. Flooring E. G. "C"	1x4-10′-16′	M	110.00	.....	85.00	.....	.....	77.00	.....	.....	.....	115.00	90.00	.....	.....	.....	.....	.....	100.00	75.00
Douglas Fir V. G. No. 2	1x4-10′-16′	M	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Red Cedar Shingles	Extra clear 16″ 5 to 2	100 sq. ft.	5.95	7.00	5.04	6.00	.....	7.50	6.50	.....	.....	.....	6.00	.....	8.64	.....	6.50	6.50	7.50	.....
Cypress Shingles	Extra clear 16″ 5 to 2	100 sq. ft.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	6.00	.....	.....	7.25	.....	.....	.....	.....
Composition Shingles	Crushed slate surfaced	100 sq. ft.	7.75	7.50	7.50	.....	6.00	6.25	5.50	.....	6.00	.....	6.25	6.50	8.00	7.25	6.00	6.90	6.50	7.00
Gypsum Plaster Board	⅜″	1,000 sq. ft.	.....	45.00	50.00	45.00	.....	37.50	45.00	45.00	40.00	32.00	35.00	40.00	.....	.....	40.00	40.00	.....	32.00
Lime	Hyd. Com.	Ton	18.00	.....	.....	16.00	21.00	20.00	20.00	15.00	20.00	15.00	20.00	.....	.....	18.00	15.00	.....	16.00	.....
Building Sand		Cu. yd.	1.80	2.50	1.50	1.28	2.50	2.50	3.00	2.00	2.97	3.75	1.00	2.00	2.50	2.50	1.50	2.00	2.50	2.00
Crushed Stone	¾″	Ton	3.00	2.75	2.80	1.30	2.40	5.50	3.00	.....	.....	4.50	3.00	5.50	6.25	2.50	.....	2.35	3.60	2.10
Window Glass	Single A 10″x12″	50 sq. ft.	.....	.....	.....	3.90	.....	5.58	.....	4.20	4.50	4.40	.....	4.25	.....	.....	.....	5.20	.....	4.50
Hollow Tile	8″x12″x12″	Each	.27	.25	.25	.22	.....	.21	.20	.21	.25	.23	.20	.....	.23	.21	.17	.16	.18	.14
Cast Iron Soil Pipe	4″ E.H. 13 lbs. per ft.	Ton	.....	.....	.....	58.80	.....	80.00	.....	.....	.....	.....	.....	.....	.....	.....	52.00	51.00	51.00	.....
Steel Pipe	1″ galv.	100 ft.	.....	.....	.....	10.00	.....	.....	.....	9.00	9.25	11.00	10.44	.....	.....	8.93	8.50	9.00	9.50	11.50
Reinforcement bars	¾″ square	100 lbs.	3.00	.....	4.25	.....	.....	3.25	.....	3.25	3.35	3.00	4.00	3.50	.....	.....	.....	.....	3.50	.....
Structural Steel	Fab. 6″ I-beams	100 lbs.	.....	.....	.....	.....	.....	.....	.....	.....	4.10	5.00	4.50	.....	.....	4.50	.....	3.20	5.00	.....
Gypsum Plaster	Neat	Ton	.....	.....	.....	.....	20.00	22.00	24.00	22.50	22.00	16.00	20.00	21.50	23.00	19.00	.....	.....	17.00	.....
Roofing Slate	No. 1 Ribbon	100 sq. ft.	.....	.....	.....	.....	.....	13.50	.....	.....	13.00	12.00	.....	.....	.....	.....	17.10	16.00	17.50	21.00
Tar Paper Roofing	2-ply 75 lbs. per roll of	100 sq. ft.	2.62	3.00	.....	2.00	.....	1.95	2.00	.....	2.00	.....	2.25	2.15	2.25	1.95	2.75	2.65	3.25	.....
Rosin Sized Sheathing	3-ply 30 lbs. per roll of	500 sq. ft.	1.75	1.60	.....	1.55	.....	1.20	1.00	.....	.75	.90	.....	.85	1.50	.80	1.00	1.00	.....	1.00

Commodity	Size or Condition	Unit	Iowa Waterloo	Council Bluffs	Missouri St. Louis	Kansas City	Ohio Cleveland	Akron	Toledo	Dayton	Louisiana New Orleans	Shreveport	Texas San Antonio	Ariz. Tucson	Wash. Spokane	Ore. Portland	N. D. Grand Forks	S. D. Sioux Falls	Calif. San Jose	Sacramento
Common Brick		1,000	$18.90	$16.50	$14.50	$16.50	$18.00	$12.50	.....	$17.00	$15.75	$13.50	$14.25	$12.00	.....	$21.00	$15.00	.....	.....	.....
Portland Cement	Excl. of containers	Bbl.	2.80	2.62	2.85	2.80	3.20	3.25	.....	3.52	3.60	3.20	2.80	4.40	$3.00	3.15	4.00	$3.00	$2.81	$3.30
Yellow Pine No. 1	Dimension 2x4-16′ S1S1E	M	45.00	48.00	46.00	46.00	57.00	50.00	$49.00	45.00	.....	44.00	48.00	.....	.....	.....	.....	.....	.....	.....
Douglas Fir No. 1	Dimension 2x4-16′ S1S1E	M	45.00	45.00	44.50	46.00	.....	.....	.....	.....	.....	.....	.....	60.00	25.00	18.00	50.00	50.50	38.00	41.50
N. Carolina Pine No. 1	Dimension 2x4-16′ S1S1E	M	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Common Boards No. 1	1x6	M	45.00	48.00	51.00	51.00	50.00	50.00	.....	65.00	.....	50.00	48.00	55.00	.....	21.00	46.00	44.00	.....	43.00
Y. P. Flooring E. G. "C"	1x4-10′-16′	M	80.00	100.00	74.00	72.50	92.00	95.00	80.00	90.00	85.00	.....	75.00	.....	.....	.....	.....	.....	.....	.....
Douglas Fir V. G. No. 2	1x4-10′-16′	M	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	97.50	70.00	56.00	95.00	.....	90.00	81.50
Red Cedar shingles	Extra clear 16″ 5 to 2	100 sq. ft.	6.50	7.00	6.53	6.50	5.76	7.00	6.40	.....	.....	7.50	7.50	7.00	.....	5.00	7.50	5.50	.....	.....
Cypress Shingles	Extra clear 16″ 5 to 2	100 sq. ft.	6.50	.....	.....	.....	.....	.....	.....	.....	4.50	.....	.....	.....	.....	.....	.....	.....	.....	.....
Composition Shingles	Crushed slate surfaced	100 sq. ft.	7.50	8.00	6.38	5.80	6.00	.....	6.75	6.00	.....	7.00	.....	.....	.....	14.00	8.00	7.50	.....	.....
Gypsum Plaster Board	⅜″	1,000 sq. ft.	32.00	.....	43.00	45.00	.....	32.50	40.00	32.50	.....	45.00	.....	55.00	55.00	.....	60.00	35.00	50.00	.....
Lime	Hyd. Com.	Ton	25.00	.....	20.00	24.00	15.60	17.60	18.00	14.00	.....	25.00	20.00	.....	27.50	28.00	.....	22.50	26.00	.....
Building Sand		Cu. yd.	1.75	3.50	2.60	2.35	2.50	1.75	3.00	1.80	2.00	1.50	1.90	1.15	.....	1.60	3.00	1.50	2.50	1.50
Crushed Stone	¾″	Ton	3.50	5.25	.....	3.00	3.50	3.25	3.00	2.50	.....	3.60	2.75	3.00	.....	.....	.....	1.60	.....	2.75
Window Glass	Single A 10″x12″	50 sq. ft.	.....	.....	3.90	4.50	.....	4.50	.....	4.50	.....	4.50	5.40	5.40	.....	.....	4.80	.....	.....	.....
Hollow Tile	8″x12″x12″	Each	.14	.13	.....	.22	.....	.17	.....	.18	.23	.23	.....	.18	.....	.15	.....	.....	.....	.....
Cast Iron Soil Pipe	4″ E.H. 13 lbs. per ft.	Ton	50.00	.....	.....	.....	.....	87.40	.....	.....	.....	.....	75.00	76.00	.....	.....	.....	.....	.....	.....
Steel Pipe	1″ galv.	100 ft.	12.00	.....	.....	.....	.....	8.66	.....	8.57	.....	10.37	.....	11.70	.....	12.00	12.86	.....	.....	.....
Reinforcement bars	¾″ square	100 lbs.	3.35	3.15	.....	2.90	.....	3.25	.....	3.00	4.25	3.75	3.60	4.00	.....	3.85	.....	.....	3.50	3.65
Structural Steel	Fab. 6″ I-beams	100 lbs.	4.80	.....	4.00	4.50	.....	3.25	.....	3.25	.....	3.50	4.40	.....	4.45	.....	.....	.....	.....	4.30
Gypsum Plaster	Neat	Ton	18.00	18.00	18.50	15.50	.....	19.00	.....	19.00	.....	24.00	20.00	23.00	18.75	24.00	28.00	.....	20.00	.....
Roofing Slate	No. 1 Ribbon	100 sq. ft.	16.00	.....	.....	.....	.....	.....	.....	16.50	.....	12.00	.....	.....	.....	.....	.....	.....	.....	.....
Tar Paper Roofing	2-ply 75 lbs. per roll of	100 sq. ft.	.....	.....	.....	.....	2.50	2.50	2.50	2.25	2.00	.....	2.75	3.25	2.50	.....	2.85	3.00	.....	.....
Rosin Sized Sheathing	3-ply 30 lbs. per roll of	500 sq. ft.	1.50	1.50	.94	1.20	.90	.75	.80	1.15	.....	1.25	.....	1.75	1.00	1.60	1.50	1.30	1.25	.....

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Address inquiries to committee members, care THE ARCHITECTURAL FORUM, 103 Park avenue, New York

THE FORUM DIGEST

A SURVEY OF IMPORTANT CURRENT ARTICLES ON BUILDING ECONOMICS AND BUSINESS CONDITIONS AFFECTING CONSTRUCTION

The Editors of this Department select from a wide range of publications matter of definite interest to Architects which would otherwise be available only through laborious effort

OFFICE BUILDING INCOME AND OPERATING EXPENSES

THIS useful data has been selected from a recent report by the Accounting and Exchange Committee of the National Association of Building Owners and Managers. Each year this committee presents the result, or what is known as the "Experience Exchange," which consists of an analysis of income and operating expense data covering, in this report, 150 buildings located in 47 cities throughout the country.

While the report is somewhat voluminous in nature and presents complete data on all these buildings, it has been possible to select certain interesting details which will be of value to the architect who may be consulting income and operating costs on prospective structures. In these paragraphs will be found a selection of various tables, charts and data recording the more interesting features of this report.

In order to develop the most direct and accurate method of comparing figures of different buildings a system has been employed of reducing the income and expenses of all properties to a percentage of the total tax valuation of land and building. "This method eliminates the effect of size and makes due allowance for differences in character and construction. The items of insurance, taxes and depreciation are increased directly proportionably to the valuation of the property. The net return on the total investment should also bear a definite relation to that investment. It can also be shown that the operating expense of a building will be in relative proportion to the valuation of the property. A cheap building, or a deteriorating building, the value of which has materially depreciated, will necessarily have to accept a smaller gross rental and will also be forced to operate at a lower cost than an expensive or new building.

"In applying this method of comparison, the first step is to determine the total tax valuation of land and building per rentable square foot. Note particularly that throughout this report all valuations used are tax valuations. The tax valuation has been used because it could, in all cases, be definitely ascertained. Inasmuch as the tax valuation is not equal to the true or market valuation, if such valuation could be determined, a building earning, say, 6% of its tax valuation, is really earning less than that amount of its true value. This difference must always be kept in mind.

"Having determined the total valuation of land and building per rentable square foot for each building, it is then possible to determine what percentage of this amount each item of expense and income is for each building. To provide a method of comparing the percentage figures of the individual buildings, the average percentages for all buildings reporting have been determined. This was done by totaling the entire land and building tax valuations of all buildings reporting, and determining what percentage of this amount the total of the several operating and income accounts for all buildings is. These average figures are shown in Table 1, which will be further described.

"These average percentages, however, do not form a strictly accurate standard of comparison between buildings varying widely in their value per rentable square foot. In other words, buildings of a low valuation are able to get a somewhat higher percentage of return in the form of rent than the building of average valuation, while buildings of excessively high valuation are not able to secure a return equal to the average percentage. The same variation holds true for the expense figures. A more accurate method of comparing building income and expenses is therefore obtained through the use of the standard curves shown on Chart 1."

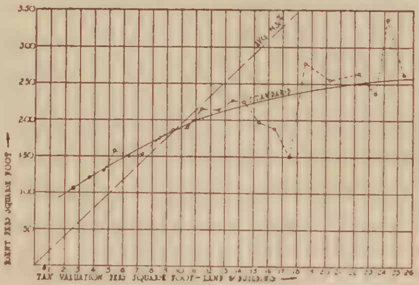


Chart 1. Standard rent curve based on taxable value

	Account	Amount	Tax Valuation	Per cent of Valuation 1921 150 Bldg.	Per cent of Valuation 1920 90 Bldg.
A—1.	Cleaning	$ 3,322,135.27	$141,804,677	2.23	2.04
2.	Electric System	447,909.04	128,502,985	.35	.23
3.	Heating & Ventilating	1,318,751.25	118,118,495	1.14	.81
4.	Plumbing	202,380.29	112,092,458	.14	.10
5.	Elevators	1,552,527.56	133,679,477	1.16	1.26
6.	General Expense	1,584,671.16	139,033,997	1.18	.86
	TOTAL	$8,428,374.57	139,033,997	6.20	5.30
7.	Power (when not distributed)	523,993.56	52,476.658	(.88)	
	Not Classified	363,335.70	10,954,750		
	TOTAL A	9,315,703.83	152,759,427	6.20	5.30
B—1.	Alterations	366,158.75	104,994,797	.24	.25
2.	Building Repairs	552,081.71	134,070,737	.37	.37
3.	Decorating	352,705.59	106,828,582	.25	.28
	TOTAL	$1,270,946.05			
	Not Classified	41,745.46			
	TOTAL B	1,312,691.51	151,610,927	.86	.90
C—1.	Insurance	371,847.54	152,713,427	.25	.20
2.	Property Taxes	4,623,808.51	150,581,927	3.08	2.37
3.	Depreciation	2,559,059.36	136,551,567	1.73	1.45
	TOTAL C	$ 7,554,715.41	152,759,427	5.06	4.02
	TOTAL A-B-C	18,183,110.75	152,759,427	12.12	10.25
D—		11,342,123.63	152,759,427	7.39	5.9
	TOTAL RENTAL INCOME	29,525,234.38	152,759,427	19.51	16.15
F & G—		328,729.05		.21	.25
E—	Rent	29,196,505.33	152,759,427	19.30	15.90
	Total Rentable Area	15,327,238	sq. ft. Avg. sq. ft. val'n	$9.95	10.68

1921 Depreciation (115 Bldgs.)........$ 2,765,132.97 Bldg. Tax Val'n only $ 87,898,860 = 3.15%
1921 Depreciation (152 Bldgs.)........ 3,085,571.73 Bldg. Tax Val'n only 103,928,138 = 2.97%
1920 Depreciation (90 Bldgs.)........ 1,613,363.00 Bldg. Tax Val'n only 54,697,700 = 2.95%

Table 1. Total amounts of office building maintenance costs reported and average percentages

Average Income and Expense Percentages

"The average percentages, as given in Table 1, were obtained by taking the total of each of the accounts of all buildings reporting and dividing them by the total valuation of those buildings. To illustrate,—the total operating expenses of all reports amounted to $9,315,703.83. The tax valuation of these buildings amounted to $152,759,427. The total operating expenses therefore amounted to 6.20% of the total valuation of these buildings. In these accounts, many buildings either did not make a proper distribution of these accounts or their statements did not include all of the accounts. In preparing average percentages, therefore, it was necessary, in connection with each of the accounts, to take a total of the amounts for that account on the statements having the account and to total the corresponding tax valuations of the same buildings. This explains the different tax valuations used for each of these accounts in Table 1.

"On Table 1 is also given the similar percentages for the year 1920, thus permitting a comparison between the two years. It will be noticed that the percentage of valuation of these accounts increased 9% and that all, except A-5, "Elevators," are higher than last year. B-1 and B-2 accounts are practically the same as last year, while B-3, "Decorating," is a trifle lower. Total Group B accounts are therefore a little less than last year. C-1, "Insurance," is a little higher, C-2, "Taxes," is quite a bit higher, and C-3, "Depreciation," is somewhat higher than last year. Total Group C accounts are therefore a little more than 1% higher than a year ago. The total of the Groups A, B and C accounts is 1.87% above the 1920 total. Total rental income shows a very nice increase amounting to 3.36%. F and G accounts, however, decreased .04%. Inasmuch as the increase in income was almost twice as much as the increase in operating expenses, the net income of the buildings shows an increase of 1.49%.

"It will be observed that the average square foot valuation of the 150 buildings reporting in 1921 is $9.95, while the average square foot valuation of the 90 buildings reporting in 1920 was $10.68. The average valuation for 1921 is therefore $.73 below that of 1920. This is due to the fact that the additional buildings included in the 1921 average were, upon the whole, buildings of a somewhat lower valuation per square foot than the buildings in last year's report."

On Chart 1 these figures are presented graphically to show their relationship with dollars of rent income per square foot and dollars of tax valuation per rentable square foot. In reading Chart 1, it will be noted that the vertical scale covers rental and the horizontal scale covers tax value per rentable foot. The dotted line connecting the circles indicates the actual rent per square foot of a number of buildings having the same dollar valuation per square foot. While it is irregular it tends in the general direction of the "standard" curve developed from it. From this chart of a standard curve it is possible to determine standard income figures per square foot for any building if its taxed valuation per square foot is known. To use the standard curve the tax valuation per square foot of the building in question is found and a line is drawn perpendicularly to that point on the bottom of the chart. Where this line crosses the standard curve the corresponding item per square foot can be read off on the left hand scale. For instance, if the tax valuation of a building is $6 per square foot, the standard curve indicates that its rental income should be $1.48 per square foot, etc. The straight broken line indicates the average percentage figure for rent already obtained compared with taxable value.

City	No. Bldgs.	Operating Expenses Total (A)	Construction Total (B)	Insurance (C-1)	Taxes (C-2)	Depreciation (C-3)	Deduction & Net (D)	Total Income
Seattle	10	7.67%	1.17%	.17%	3.55%	2.19%	10.51%	25.26%
Cleveland	10	5.97	.86	.25	2.42	1.82	9.12	20.44
Duluth	5	9.65	1.14	.43	2.60	2.36	8.48	24.66
Omaha	6	6.43	.83	.34	2.73	.99	8.40	19.72
San Francisco .	10	3.91	.19	.19	1.68	1.24	7.55	14.76
New York ...	9	4.56	.68	.17	2.69	1.12	7.52	16.74
Detroit	6	5.50	.98	.25	2.78	2.05	7.32	18.87
Portland	5	5.41	.60	.21	2.89	1.39	7.26	17.76
Little Rock ..	4	7.05	1.30	.22	1.57	1.60	7.07	18.80
Chicago	23	5.69	.81	.20	3.27	1.30	7.01	18.28
Indianapolis .	4	5.00	.72	.19	2.42	1.41	3.44	13.18
Average	150	6.20	.86	.25	3.08	1.73	7.39	19.51

Table 2. Percentage income and expenses of office buildings by cities given as per cent of tax valuation

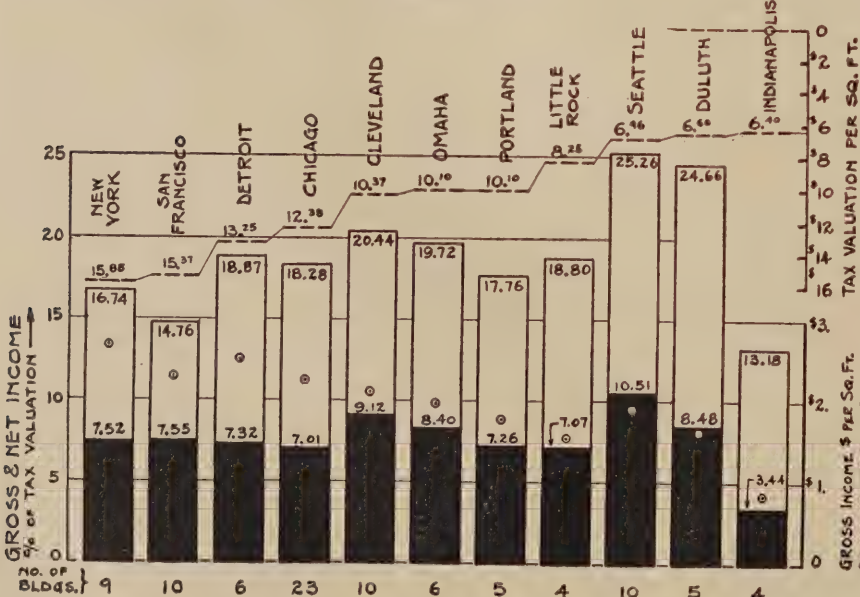


Chart 2. City comparison, total and net income and operating costs of office buildings per rentable square foot

Building Income and Expenses by Cities

In Table 2 and in Chart 2 presented here there will be found grouped for ready reference and convenient comparison the average percentage figures of the cities indicated. In considering the planning of a new building in any of these locations these figures may be found of value for comparative purposes.

Chart 2 presents a comparison of the total income, net income and operating cost of the several cities.

"On this chart, the total height of the columns under the names of the cities represents the percentage of gross return on the tax valuation. The lower or black part of each column represents the percentage of net return on the tax valuation. The upper part of the column, between the gross return and the net return, represents the total cost of operation as a percentage of the tax valuation. So for New York gross return is 16.74% of the tax valuation, and net return is 7.52%. The difference or 9.22% is the operating expense.

"For further comparison, the average tax valuation per rentable square foot is plotted with the dotted line at the top of Chart 2 and the scale is reversed. For a lower square foot tax valuation the curve goes up instead of down. In general, the gross return varies *inversely* with the tax valuation per square foot,—or the low valuation properties obtain the high percentages of return. San Francisco, with a square foot tax valuation of $15.37, shows a gross return of 14.76%, while Seattle with a square foot valuation of $6.96 has a gross return of 25.26%.

"The gross income in dollars per square foot is also shown in Chart 2 by the circles, plotted against the scale at the lower right side. It is evident that the gross income in dollars per square foot varies *directly* with the tax valuation per square foot. It is because the square foot income does not fall off as fast as the valuation per squaɹɟ ǝoot, that the lower valued properties receive a larger *percentage* of return than those high valued."

Effect of Size of Building, Valuation and Efficiency of Plan on Quantity of Labor

After presenting exhaustive figures of analyses of power, heating and labor costs, the interesting figures in Table 3 are developed:

Avg. Hours of Labor per 1000 Sq. Ft.	Avg. Rentable Area of the Bldg.	Avg. Bldg. Valuation per Rentable Sq. Ft.	Avg. Percent. of Lot Area Actually Used as Rentable
32	134,530	$3.41	.772
63	59,039	3.93	.665
77	67,482	4.02	.610
86	100,689	5.54	.648
95	100,683	5.25	.645
106	118,758	6.08	.626
118	113,200	5.15	.636
128	107,705	4.62	.604
139	140,549	5.94	.615
169	55,003	7.87	.622

Table 3

"From this table it will be seen that the size of the building does not seem to affect in any regular manner the quantity of labor required. The building value per rentable square foot, however, increases with the amount of labor used, or to state it the other way around, the amount of labor necessary increases with the building value per rentable square foot, that is, with the type of the building. In other words, the more expensive and higher class the building, the more labor required to operate it. It will also be observed that the percentage of lot area actually used as rentable decreases as the quantity of labor required increases. As the percentage of lot area actually used as rentable represents the efficiency with which the building is laid out, or the quantity of the building's space which is actually used as rentable, it is apparent that the smaller the proportion of space actually rented, the greater the amount of corridor and public space that must be cleaned for each rentable square foot. The efficiency with which the building is planned therefore has a material effect upon the quantity of labor required to operate it.

"Because of the wide variation in quantity of labor required by buildings apparently similar in type, the committee felt that the labor data obtained in this way was hardly complete enough to enable accurate conclusions to be drawn therefrom. In other words, if one building worked its janitors five hours and another building nine and one-half hours, the latter building would have a much smaller number of days' labor to report, because it would require a smaller number of employes than the former building. In like manner, a building buying all its energy, and consequently not having an engine room crew, would have a smaller number of days' labor to report than a building operating a complete isolated plant. Because of the importance which the committee placed on the value of some really accurate labor figures, it prepared a supplementary labor questionnaire which was sent to each member reporting. On this questionnaire members were asked to give the average number of people employed in each branch of the building's service and to indicate for each of these branches the average hours worked per day, and days worked per year. From these figures it was then possible to determine with reasonable accuracy the number of hours worked per year for each class of employes in the buildings. About one-third of the buildings that had given us labor data in their original report returned the supplementary questionnaires carefully filled out. From these questionnaires it has been possible to establish some unit quantities of labor per square foot that should be of the greatest value. On the supplementary questionnaire the buildings made their own classifications of labor. The committee felt it impractical to attempt to make comparisons of the many different classifications used by our members, and therefore grouped all labor into four general classes:

"1. All the labor involved in the cleaning work of the building, such as that of day and night janitors, scrubwomen, marble polishers, window washers, etc.

"2. Elevator operators and watchmen.

"3. All power plant labor, including not only engineers, firemen, etc., but also plumbers, electricians, steamfitters, elevator repairmen, etc.

"4. All labor not coming within these three classifications and consisting largely of superintendence and miscellaneous labor."

It is interesting to observe the proportion which each of the four classes of labor is of the total amount of labor used in the building. This proportion is:

Kind of Labor	Hours per Sq. Ft.	Percentage of Total
Cleaning	.503	63
Elevators	.161	21
Engine Room	.086	11
Miscellaneous	.042	5
Total	.792	100

Table 4. Proportion of four classes in total amount of labor

This tables gives the quantity of labor and rates per hour by cities as developed from these reports. It must be borne in mind that the engine room figure used in this table is the average of all types of engine rooms, and that in buildings buying their power this figure would be considerably less, while in buildings operating a complete isolated plant it would be considerably more.

City	No. of Buildings	Cleaning Labor		Elevator Labor		Total Labor	
		Hours per Sq. Ft.	Rate per Hour	Hours per Sq. Ft.	Rate per Hour	Hours per Sq. Ft.	Rate per Hour
Chicago	8	.59	66.7c	.150	60.6c	.868	56.9c
San Francisco	4	.41	46.3	.215	42.8	.693	49.2
Cleveland	3	.49	39.9	.199	44.8	.856	47.4
Seattle	5	.315	45.2	.149	37.9	.538	47.1
Detroit	4	.496	45.9	.229	44.4	.909	51.2
Omaha	3	.575	30.3	.208	30.2	.972	35.4
Portland	3	.372	38.3	.190	37.9	.629	38.8
Average all Bldgs.		.503	37.9	.161	45.2	.792	46.3

Table 5. Quantity of labor and rates per hour

YEAR-ROUND CONSTRUCTION TO REDUCE COST

WINTER work in the various departments of the building industry keeps the mechanics busy the year round and reduces the contractors overhead as it enables it to be distributed over more jobs.

A rather interesting work recently undertaken by the New York Building Congress and reported in *Building Age*, November, 1922, tends to initiate a program to reduce the cost of building by adding more seasons to the industry, thereby eliminating both the rush periods when bonuses are frequently paid and the periods of unemployment. A survey has just been completed analyzing the building situation. The findings are such that it is believed with the co-operation of all the elements contributing to the building industry a workable program can be put in operation that will be a material benefit to every class of society from the laborer to the investor.

The congress conducted its investigation over a period of four months, and the findings cover 29 distinct occupations as affected by the average employment variation of upward of 150,000 workmen annually during the past 10 years.

Recognizing that the basic factors in the seasonal demand are winter and weather conditions, opportunity for investment, general business tendencies and emergency needs, attention is being focused on new construction subject to control.

In summarizing its investigation the congress finds that custom is really the biggest influence in causing the peak loads on the demand for labor, especially during the renting seasons. Careful business foresight is what is needed more than anything else to effect lower costs, with less waste, higher quality of workmanship and greater production, according to the reports.

It is pointed out that investment and speculative construction on new buildings classifies itself in general into three main divisions: apartment houses, commercial buildings and loft buildings. The periods for renting these types of construction are based largely on custom and tradition, and have an important bearing on labor demand. Large apartments are commenced so as to allow 12 or 14 months for completion, the finished buildings to be ready for occupancy by October 1, which custom has decreed is the moving season for residents of New York.

Commercial buildings usually call for commencing work on May 1 and completion on or before the following May. Loft buildings are often built in six, eight or nine months, and have a strong demand for occupancy on February 1.

Thus one of the vital factors in the new construction is the established rental period. It is also important to remember that the volume of building in the three types of new construction just mentioned varies from year to year, due to the opportunity for investment and the supply and demand, so that one year of large development in any one division may be followed by a decline in volume the next, and *vice versa.*

The new construction most subject to control aside from construction for investment and speculative purposes is the large amount of building done for the government, state and city. This can be open to regulation by the governing boards in control of their development. Religious and educational structures are also a factor, and new buildings and additions that are erected for the owners' prearranged occupancy without regard for investment or speculative returns are important.

In prefacing a detailed statement of recommendations for adding more seasons to the building trade, the *New York Building Congress Bulletin* says:

"While the congress feels fully aware of the fact that an entire cure for seasonal employment is impossible on account of weather conditions, opportunity for investment, emergency and the will of the owner and speculator, still the opinion is general that much can be done to adjust elements that effect peak demands and as a result decrease much of the unnecessary cost and loss to which the building industry is now subjected.

"With this understanding these recommendations are made in hope that they will be suggesting to owners, investors, real estate brokers, architects, engineers, material manufacturers, contractors, labor and others who may be interested in reducing costs and eliminating unemployment periods:

"1. Establish a wider range of rental period dates.

"2. Regulate government, state, city, religious and educational building construction so that it will come during the low period of employment wherever possible.

"3. Regulate the construction of new buildings and additions that are erected for owner's prearranged occupancy without regard for investment returns so that it will come during the low period of employment.

"4. Encourage beginning work on new construction March 1 instead of the customary date of May 1, thereby bringing its labor demand two months ahead of the demand peak, with a greater supply available.

"5. Plan maintenance and repair work so that it will come during the season for which there is a low demand for the labor involved, subject to emergency conditions that must be considered.

"6. Wherever possible adapt the demand for 'inside' and 'outside' work to *labor available.*"

THE QUESTION OF ELECTRIC HEATING

AN interesting editorial appeared in *Electrical World* for December 16 under the heading of "Will-o'-the-Wisp of Electric Heating." It may be of value to architects who have given this question consideration to read this presentation of facts: "Occasionally some people with authority in the electric light and power industry get a notion which is so white hot that no matter how much cold water is poured on it it just sizzles and refuses to go out. The chimneyless town is a typical example. It grips the mind and fires the imagination. No coal, no ashes, no dirt, no soot, no worries—nothing but cozy comfort, and all through the instrumentality of electricity. Was ever anything so ideal or more alluring? And yet when we contrast this ideal with fact and experience how sadly shattered it becomes! If electric heat is required intermittently, as for cooking or to take the chill from a room in the cool evenings of the fall or spring, it can be used to advantage and economically; but to heat an average house electrically in any section of this country where winter prevails is out of the question. Electricity is not destined ever to take the place of coal or other fuels for heating residences or offices on an extensive scale.

"As against the cheapest hydro-electric power, coal at present prices, even though burned inefficiently, will heat a house at one-quarter the cost. Where energy for heating is obtained from coal-burning stations its use is nothing short of wanton. The chemical energy in a ton of coal is equal to approximately 7,500 kw.-hr. of electrical energy. Granting that 40 per cent of the heat is lost up the chimney, there is still 4,500 kw.-hr. available. Electrical energy, assuming that there were enough line and transformer capacity available to carry the load and that a rate as low as one cent per kilowatt-hour were offered, would therefore be comparable to coal at $45 a ton. Few central-station companies can offer a one-cent rate, and fewer still can afford the extra investment necessary in lines and transformers to feed a heating load which at best would be used only four or five months in the year. Here and there locations may be found, such as the Gila or Mojave deserts or the southernmost part of Florida, where the amount of heat required is so small that it is economical to make it all electrically. In almost every other section of the country electric heat is out of the question except as an auxiliary to some other form. Patrons who seek this luxury should be apprised of its great cost and discouraged in its use as a matter of public policy."

SURVEY OF REAL ESTATE CONDITIONS

THE Bureau of Information and Research of the National Association of Real Estate Boards has recently completed a survey of real estate conditions in 184 cities and counties of the United States and Canada.

Reports indicate material increases in the amounts of building permits of 1922 over 1921. One hundred and thirty-six reports are to the effect that 1922 has shown a great increase. Only 11 cities show decreases in amount of building permits; two of these, Bridgeport, Conn., and Norfolk, Va., are 125,000 in population or over; the rest of the cities reporting decreases or permits on a par with last year are comparatively small places, 35,000 and under. One board reports more in dollars and less in space. This condition would seem to be indicated in many localities.

The trend of business rentals upward is more decided than with residential property. Reports of 95 cities indicate marked increases, and 53 steady.

Twelve reports show a downward tendency in business rentals. Of the 12 so reporting, with the exception of Kansas City, Toronto and Buffalo, three have a population of between 50,000 and 85,000, and the rest are 20,000 or less. However, Kansas City, Toronto and Buffalo report market conditions for business property as being good. Cleveland, with its surplus of office buildings, reports rentals advancing in the congested district, and market conditions for business property good.

Market conditions are reported good in 80 cities; fair in 59, and poor in 43.

Labor conditions are reported satisfactory in 120 cities; unsatisfactory in 10; five reports indicate some idle men, and 43 show some shortage, particularly in building trades.

Reports indicate general improvement in the mortgage money situation. Ninety-five cities report mortgage money is available in sufficient quantity, whereas 78 declare the supply insufficient. Four reports declare conditions still improving, although not yet good. No reports indicate conditions becoming worse.

7 per cent and 6 per cent seem to be rates generally prevailing. Sixty-six cities report mortgage money available at 7 per cent; 62 at 6 per cent; 33 at 8 per cent; six at 7½ per cent; three at 5 per cent; one at 5½ per cent, and one at 10 per cent.

CAR SHORTAGE EASING UP WITH DECLINE IN LOADINGS

REQUISITIONS for freight cars over and above the current supply totaled 133,786 cars on Nov. 30, according to reports received up to Dec. 12, by the American Railway Association and reported by *Engineering News-Record.* This means that the car shortage has decreased 18,781 cars since Nov. 23. The box car shortage was reduced 11,569 cars, leaving a deficit of 67,468; while the demand for coal cars in excess of supply totaled 42,848, or a reduction of 835 within the same period. At the same time, 5,595 surplus freight cars of various classes and in good repair were reported, representing an increase of 289 cars within the week. Car loadings for the five weeks (Nov. 4 to Dec. 2) during 1920, 1921 and 1922 were as follows:

LOADINGS OF REVENUE FREIGHT

Week	1922	1921	1920
Dec. 2	845,219	741,849	882,604
Nov. 25	955,495	673,465	803,701
Nov. 18	969,094	790,363	889,138
Nov. 11	953,909	755,777	927,586
Nov. 4	994,827	837,576	915,615

Selected List of Manufacturers' Literature

FOR THE SERVICE OF ARCHITECTS, ENGINEERS, DECORATORS, AND CONTRACTORS

The publications listed in these columns are the most important of those issued by leading manufacturers identified with the building industry. They may be had without charge, unless otherwise noted, by applying on your business stationery to *The Architectural Forum,* 142 Berkeley St., Boston, Mass., or the manufacturer direct, in which case kindly mention this publication.

Listings in this Department are available to any manufacturer at the rate of $5 per listing per month.

ACOUSTICS

Johns-Manville, Inc., Madison Ave. & 41st St., New York, N. Y.

Architectural Acoustics. Booklet. 6 x 9 in. 24 pp. Illustrated. Treatise on the correction of architectural acoustics in churches, schools, hospitals, office buildings and other places.

ASH HOISTS—ELECTRIC AND HAND POWER

Gillis & Geoghegan, 544 West Broadway, New York, **N. Y.**

General Catalog. 8½ x 11 in. 20 pp. Fully illustrated. Contains specifications in two forms (with manufacturer's name and without). Detail ¼" scale for each telescopic model and special material-handling section.

The Man-Saving Load Lifter. 5⅞ x 8⅞ in. 8 pp. Illustrated. Describes G&G Telescopic and Non-Telescopic Hoists for handling material in factories.

BOILERS—See Heating Equipment

BRICK

American Face Brick Association, 1751 Peoples Life Bldg., Chicago, Ill.

The Story of Brick. Booklet. 7 x 9¼ in. 55 pp. Illustrated. Presents the merits of face brick from structural and artistic standpoints. Tables of comparative costs.

The Home of Beauty. Booklet. 8 x 10 in. 72 pp. Color plates. Presents fifty designs for small face brick houses submitted in national competition by architects. Text by Aymar Embury II, Architect. Price 50c.

Bungalow and Small House Plans. Booklets. 8½ x 11 in. 50 pp. Illustrated. Four booklets, showing a variety of designs for small face-brick houses, covering 3, 4, 5, 6, 7 and 8 room houses. Price, 25c. each, $1 for the set.

A Manual of Face-Brick Construction. Booklet. 8½ x 11 in. Text-book on construction of the brick wall and various uses of face brick. 31 colored plates of brick houses with plans. Price, $1.00.

Architectural Details in Brickwork. Series 1, 2, 3. 8½ x 11 in. Very useful to the architect or draftsman. Sent free to architects applying on their office stationery. To others, $1.50.

BUILDING FINANCE

S. W. Straus & Co., 565 Fifth Ave., New York, N. Y.

The Straus Plan of Financing. Booklet. 8 x 6 in. 24 pp. Illustrated. Describes Straus system of co-operation with Architects, Builders, Engineers and Brokers in financing important building operations; also the making of construction loans on the larger and better properties in our large cities.

Forty Years Without Loss to Any Investor. Booklet. 8 x 5 in. 38 pp. Illustrated. A carefully prepared booklet for the thinking investor. Describes Straus bonds, the property upon which loans are made, and explains the Straus plan of safeguards which made possible the 40-year record.

BUILDING STONE—See Stone, Building

CEMENT

Atlas Portland Cement Company, 25 Broadway, New York, N. Y.

The Stucco House. Booklet. 8½ x 11 in. 96 pp. Illustrated. Contains valuable data on application of Portland Cement Stucco for those interested in building. Also photographic reproductions of beautiful and unusual stucco finishes, instructions and specifications.

Atlas Handbook on Concrete Construction. Book. 4¼ x 6½ in. 144 pp. Illustrated. Provides in convenient form practical information on concrete, plain and reinforced. Written from the practical rather than from the technical point of view. A valuable pocket text-book.

Carney Company, The, Mankato, Minn. Booklet. 8 x 10 in. 24 pp. Illustrated. Complete information on product, showing prominent buildings in which this cement has been used.

Louisville Cement Co., 315 Guthrie St., Louisville, Ky.

Brixment. Booklet. 7½ x 5 in. 16 pp. Illustrated. Brixment, what it is, what it does, how it does it and why.

Sandusky Cement Co., Dept. F, Cleveland, Ohio.

Medusa White Portland Cement, Stainless. Booklet. 8½ x 11 in. 48 pp. Illustrated.

Medusa Waterproof White Portland Cement. Booklet 6 x 9 in. 32 pp. Illustrated.

Medusa Review. 6 x 9 in. 18 pp. Illustrated. House organ issued bi-monthly.

CONDUIT

National Metal Molding Co., 1113 Fulton Building, Pittsburgh, Pa.

Bulletin of all National Metal Molding Products. In correspondence folder. 9½ x 11½ in.

Sherarduct. Circular. 5 x 8 in. Illustrated.

Flexsteel. Circular. 5 x 8 in. Illustrated.

CONSTRUCTION, FIREPROOF

National Fire Proofing Co., 250 Federal St., Pittsburgh, Pa.

Standard Fire Proofing Bulletin 171. 8½ x 11 in. 32 pp. Illustrated. A treatise on fire proof floor construction.

Northwestern Expanded Metal Co., 934 Old Colony Building, Chicago, Ill.

Fireproof Construction. Catalog. 6 x 9 in. 72 pp. Illustrated. Handbook of practical suggestions for architects and contractors. Describing Nemco Expanded Metal Lath.

Fire-proof Construction. Handbook. 6 x 9 in. 72 pp. Illustrated. Describing Kno-Burn expanded metal lath.

United States Gypsum Company, 205 West Monroe St., Chicago, Ill.

Pyrobar Gypsum Tile. Booklet. 8½ x 11 in. 32 pp. Illustrated. Details and specifications for fireproof partitions.

Bulletins, 8½ x 11 in., containing details and specifications for Pyrobar voids for use with reinforced concrete joist floor construction; Pyrobar roof tile; and monolithic gypsum floors and roofs.

DAMPPROOFING

Sonneborn Sons, Inc., L., 116 Fifth Ave., New York.

Specification Sheet. 8½ x 11 inches. Description and specifications of compounds for dampproofing interior and exterior surfaces.

The Truscon Laboratories, Detroit, Mich.

Booklet. 5⅛ x 7¾ in. Illustrated. Contains descriptions and specifications of black dampproofing compounds for interior and exterior use.

DOORS, WINDOWS AND TRIM, METAL

Dahlstrom Metallic Door Company, 425 Buffalo Street, Jamestown, N. Y.

Architectural Catalog. 10 x 14 in. 46 pp. 11 sections. Illustrated. Catalog showing our regular styles and types of hollow metal doors and interior trim. Various types of frames and other architectural shapes also illustrated.

Architectural Portfolio. 14 x 18 in. 30 pp. Illustrated. Portfolio of various designs and types of Dahlstrom doors. Drawings and details of each style or type. This is only sent free to reliable architects.

The Compound & Pyrono Door Company, St. Joseph, Mich.

Pyrono Handbook for Architects and Contractors. 8½ x 11 in. 16 pp. Contains full information regarding Pyrono Fireproof Veneered Doors and Trim, with complete details and specifications.

Pyrono details in sheet form for tracing.

Richards-Wilcox Mfg. Co., Aurora, Ill.

Fire Doors and Hardware. Booklet. 8½ x 11 in. 64 pp. Illustrated. Describes entire line of tin-clad and corrugated fire-doors, complete with automatic closers, track hangers and all the latest equipment—all approved and labeled by Underwriters' Laboratories.

DUMBWAITERS

Kaestner & Hecht Co., Chicago, Ill.

Bulletin 520. Describes K. & H. Co. electric dumbwaiters. 8 pp.

Sedgwick Machine Works, 151 West 15th Street, New York.

Catalog and Service Sheets. Standard specifications, plans and prices for various types, etc. 4¼ x 8¼ in. 60 pp. Illustrated.

ELECTRICAL EQUIPMENT

Frink, Inc., I. P., 24th Street and 10th Avenue, New York, N. Y.

Catalog 415. 8½ x 11 in. 46 pp. Photographs and scaled cross sections. Specialized bank lighting, screen and partition reflectors, double and single desk reflectors and Polaralite Signs.

General Electric Company, Schenectady, N. Y.

Wires and Cables. Booklet. 8 x 10½ in. 85 pp. Illustrated. Four bulletins in a binder, describing wires and cables in general, conductors insulated with vulcanized rubber compound, varnished cambric and paper insulated cables, splicing materials and junction boxes for cable installations, armored cables.

Electric Fans. Folder. 6 pp. 3¼ x 6 in. Illustrated. Describes 1922 line of electric fans, giving catalog numbers, voltages and frequencies.

Reliable Wiring Devices. Catalog. 3 x 4⅝ in. 206 pp. Illustrated. Pocket catalog giving prices, schedule classifications and data for socket receptacles, switches, rosettes, cutouts and fuses for miscellaneous devices.

Lighting of Public Buildings. Bulletin. 6 x 9 in. 25 pp. Illustrated. Describes lighting of galleries, banks, museums, libraries, municipal, county and state buildings.

Hart & Hegeman Mfg. Co., 342 Capitol Ave., Hartford, Conn.

A new H & H Switch. Leaflet. 3½ x 6 in. 4 pp. Illustrated. Illustrates a new H & H composition base push switch of DeLuxe quality.

Tumbler Switches. Booklet. 3½ x 6 in. 6 pp. Illustrated. Shows complete line of H & H Tumbler Switches.

H & H Elexits. Booklet. 8 x 10¼ in. Illustrated. Shows new complete line of Elexits—places for lights. May be used for Wall Receptacles or Electric Fixtures.

H & H Radio Button Push Switches. Booklet. 3½ x 6 in. Illustrated. Radio Luminous Buttons applied to Push Switches and Sockets.

Kohler Co., Kohler, Wis.

Kohler Automatic Power and Light 110 Volt D. C. Booklet. 5 x 7 in. 32 pp. Illustrated. Describes a standard voltage automatic, electric power and light plant for isolated homes.

Simplex Wire & Cable Co., 201 Devonshire Street, Boston, Mass.

Simplex Manual Catalog and reference book. 6¾ x 4¼ in. 92 pp. Contains in addition to information regarding Simplex products, tables and data for the ready reference of architects, electrical engineers and contractors.

Specification No. 2053. For Simcore Wires and Cables. Various sizes of Conductor-Rubber Insulation.

Sprague Electric Works of the General Electric Company, 527 West 34th St., New York, N. Y.

Panel Boards and Cabinets. Catalog No. 47901. 8 x 10½ in. 70 pp. Illustrated. Panel Boards and Cabinets shown in this catalog have been selected after careful study of the general requirements. All appliances listed herein meet with the requirements of the National Board of Fire Underwriters.

Panel Circuits. Bulletin No. 47941. 8 x 10½ in. 8 pp. Illustrated. In addition to circuits for panel boards illustrated, a full line of circuits for panel boards having fuses inside branch circuit switches is also listed.

Panel Boards and Cabinets. Bulletin No. 47942. 8 x 10½ in. 16 pp. Illustrated. This bulletin covers the ever increasing demand for devices that provide maximum safety to the operator.

SELECTED LIST OF MANUFACTURERS' PUBLICATIONS — *Continued from page 75*

ELECTRICAL EQUIPMENT — Continued

Sprague Electric Works of the General Electric Company—Continued
Dead Front Panels. Pamphlet No. 727. 5¼ x 7¾ in. 8 pp. Illustrated. A "Safety First" pamphlet covering Safety Panels and Dead Front Switchboards, for use in office buildings, factories, theaters, department stores, public buildings and in all places where the switches may be operated by persons ignorant of the changes of contact with current-carrying parts.

Varnum Door Engine Company, 949 West 16th St., Los Angeles, Calif.
Varnum Electric Door Engines. Booklet. 5 x 7¾ in. 16 pp. Illustrated. Descriptive booklet containing illustrations and list of representative institutions now using Varnum Door Engines.

ELEVATORS

Kaestner & Hecht Co., Chicago, Ill.
Bulletin 500. Contains 32 pp. Giving general information on passenger elevators for high buildings.
Bulletin 530. Interlocks for Passenger and Freight Elevators.
Bulletin. Signals; for Passenger and Freight Elevators.

Otis Elevator Company, 11th Ave. & 26th Street, New York, N. Y.
Otis Push Button Controlled Elevators. Booklet. 6 x 9 in. 56 pp. Illustrated. Detailed description of Otis Push Button Elevators. Their uses in residences, stores, institutions, apartment houses, business offices and banks, etc.
Otis Gravity Spiral Conveyors. Booklet. 6 x 9 in. 56 pp. Illustrated. Gravity spiral conveyors for lowering packaged merchandise, boxed, caged and bundled goods in factories, warehouses, terminal buildings, etc.
Otis Electric Traction Elevators. Booklet. 9 x 12 in. 28 pp. Illustrated. Full details and illustrations of Otis geared and gearless traction elevators for all types of buildings.
Otis Escalators. Booklet. 6 x 9 in. 36 pp. Illustrated. Description of step and cleat type single and double file escalators (moving stairways).

Richards-Wilcox Mfg. Co., Aurora, Ill.
Elevators. Booklet. 8½ x 11 in. 24 pp. Illustrated. Describes complete line of "Ideal" elevator-door hardware and checking devices, also automatic safety devices.

Sedgwick Machine Works, 151 West 15th Street, New York.
Catalog and descriptive pamphlets. 4¼ x 8¼ in. 70 pp. Illustrated. Descriptive pamphlets on hand power freight elevators, sidewalk elevators, automobile elevators, etc.

FENCES

American Fence Construction Co., 130 West 34th St., New York.
Afco Factory Fences. Booklet. 9 x 12 in. 32 pp. Illustrated.
Residential Fences. Booklets. 7 x 2½ in. Illustrated. A series of booklets on residential fences consisting of photographs and brief descriptions.

Page Steel and Wire Company, Bridgeport, Conn.
Page American Ingot Iron Fence. Booklet. 4 x 6⅝ in. 76 pp. Illustrated. Complete information, with diagrams, sizes, etc., for those interested in rust-resisting iron fence made of ARMCO iron.
Page Ornamental Fence for Lawn and Garden. Booklet. 6 x 9 in. 12 pp. Illustrated. Description, with photographs and diagrams of lawn fence and gates. Complete instructions for ordering fence.

The Stewart Iron Works Company, Cincinnati, Ohio.
Book of Designs "B." 9 x 12 in. 80 pp. Illustrated. Book of designs illustrated from photographs of ornamental iron fence and entrance gates erected by us. Valuable to architects.

FIRE DOORS —See Doors, Windows and Trim, Metal

FIREPLACE EQUIPMENT

Covert Co., H. W., 137 E. 46th Street, New York, N. Y.
Hints on Fireplace Construction. Catalog. 5⅛ x 8½ in. 11 pp. Illustrated. Diagrams of construction and installation of Covert "Improved" and "Old Style" Dampers and Smoke Chambers. Also illustrations of Covert brass and wrought iron Fireplace Fittings.

FLOORING

Armstrong Cork & Insulation Co., 132 24th Street, Pittsburgh, Pa.
Linotile Floors. Catalog. 6 x 9 in. 40 pp. Color plates. Describes Linotile, a composition of ground cork, wood flour, linseed oil and various gums and pigments in tile form.
Armstrong's Cork Tile. Revised Edition. Booklet. 24 pp. 5 x 7 in. Illustrated in color. Contains complete specifications.

Armstrong Cork Co. (Linoleum Dept.), Lancaster, Pa.
Armstrong's Linoleum Floors. Catalog. 8½ x 11 in. 54 pp. Color plates. A technical treatise on linoleum, including table of gauges and weights and specifications for installing linoleum floors.
Decorative Floors. Booklet. 11¼ x 15 in. 16 pp. Color plates.
Armstrong's Linoleum Pattern Book, 1922. Catalog. 3½ x 6 in. 168 pp. Color plates. Reproductions in color of all patterns of linoleum and cork carpet in the Armstrong line.
Quality Sample Book. Three books. 3½ x 5¾ in. Showing all gauges and thicknesses in the Armstrong line of linoleum and cork carpets.
Detailed Directions for Laying and Caring for Linoleum. Handbook. 5 x 7 in. 48 pp. Instructions for linoleum layers and others interested in learning most satisfactory methods of laying and taking care of linoleum.
Business Floors. Booklet. 6 x 9 in. 48 pp. Illustrated in color. Explains use of linoleum for offices, stores, etc., with reproductions in color of suitable patterns, also specifications and instructions for laying.

Maple Flooring Manufacturers Assn., Stock Exchange Bldg., Chicago, Ill.
Flooring of Maple, Beech and Birch. Booklet. 9½ x 7 in. 46 pp. Illustrated. A complete manuscript on Maple, Beech and Birch Flooring, written by Forest Crissey.
Color Harmony in Floors. Booklet. 24 pp. 6⅜ x 4½ in. Illustrated. Reproductions in six colors of 12 styles of maple, beech and birch floors, with a short message on the subject.
How to Lay and Finish Maple, Beech and Birch Floors. Booklet. 6⅛ x 3⅜ in. 16 pp. Illustrated. A handbook on laying maple. beech and birch floors and on keeping them in good condition.
Grading Rules for Maple, Beech and Birch Flooring. Leaflet. 6⅛ x 3⅜ in. 8 pp. Illustrated. Contains information on grades, standard measurement, custom governing re-inspection, etc.

FLOORING — Continued

The Marbleloid Co., 461 Eighth Ave., New York, N. Y.
The Universal Flooring for Modern Buildings. Booklet. 6¾ x 9¾ in. 32 pp. Illustrated. Describes uses and contains specifications for Marbleloid flooring, base, wainscoting, etc.
Marbleloid Flooring for Hospitals. Bulletin. 8½ x 11 in. 4 pp. Illustrated. Describes the especial features of this composition floor for hospital buildings.
Marbleloid Specifications. Booklet. 8½ x 11 in. 4 pp. Illustrated.
Marbleloid Flooring for Schools. Bulletin. 8½ x 11 in. 4 pp. Illustrated. Describes special features of this composition floor for school buildings.

Thos. Moulding Brick Company, 133 West Washington St., Chicago, Ill.
T-M-B Mastic Flooring. Catalog. 6 x 9¼ in. 16 pp. Illustrated. Includes specifications also.

Muller Co., Franklyn R., Waukegan, Ill.
Asbestone Composition Flooring. Circulars. 8½ x 11 in. Description and Specifications.

The Nairn Linoleum Company, 179 Belgrove Drive, Kearny, N. J.
Linoleum. Booklet. 5½ x 8½ in. 68 pp. Illustrated in color. Reproductions in color of Inlaid, Printed, Plain and Battleship Linoleum; also Cork Carpets and Felt Base Floor Coverings.

Oak Flooring Advertising Bureau, 1057 Ashland Block, Chicago, Ill.
Modern Oak Floors. Booklet. 6⅛ x 9¼ in. 24 pp. Illustrated. A general book that tells the complete story on Oak Flooring.
Oak Flooring, How and Where to Use it. Booklet. 3½ x 6¼ in. 16 pp. Illustrated. A small, technical book showing the general rules, standard thickness and widths, how to lay, finish and care for oak floors.

FLOOR HARDENERS

General Chemical Company, The, 25 Broad Street, New York, N. Y.
Making Concrete Wear Like Iron. Booklet. 4 pp. 8½ x 11 in. Illustrated. Describes Hard-n-tyte and its application to concrete floors.
Casehardening Concrete. Folder. 3¾ x 8½ in. 6 pp. Illustrated. Describes treatment of concrete surfaces with Hard-n-tyte so that they become literally "casehardened."
The Hard-n-tyte Specification. Booklet. 8½ x 11 in. 4 pp. Gives exact specifications for concrete floor finish.

FLOOR HARDENERS (CHEMICAL)

Sonneborn Sons, Inc., L., 116 Fifth Ave., New York.
Lapidolith, the liquid chemical hardener. Complete sets of specifications for every building type in which concrete floors are used, with descriptions and results of tests.

The Truscon Laboratories, Detroit, Mich.
Agatex and Its Performances. Booklet. 8½ x 11 in. 16 pp. Describes use of Agatex Liquid Chemical for hardening cement floors.

FLOOR HARDENERS (METALLIC)

The Truscon Laboratories, Detroit, Mich.
Truscon Floor Hardener. Pamphlet. 7¾ x 5½ in. 18 pp.

FURNACES—See Heating Equipment

FURNITURE

Estey Organ Company, Brattleboro, Vt.
Pipe Organs. Complete specifications and full information furnished to the architect for pipe organ to be installed in any given residence, upon receipt of plans and other particulars.

Hampton Shops, 18 East 50th St., New York, N. Y.
Glimpses from Hampton Exhibits. Brochure. 16 pp. 5 x 7½ in. Illustrated. Shows examples of Hampton work and gives one an idea of their resources. Of interest to the client as well as to the architect.

Kensington Mfg. Company, 14 East 32nd St., New York, N. Y.
Photographs and full description of hand-made furniture in all the period styles furnished promptly in response to a specific inquiry.
Illustrated booklet indicative of the scope, character and decorative quality of Kensington furniture mailed on request.

Kewaunee Mfg. Company, Kewaunee, Wis.
Book No. 13. 6 x 9 in. 194 pp. Illustrated. Full description of Kewaunee Vocational Equipment for domestic science, demonstration dining rooms, fitting rooms, drafting rooms, manual training and shop-equipment, kindergarten and hospital equipment and dietetic tables.
Book No. 14. 6 x 9 in. 226 pp. Illustrated. Shows Laboratory furniture for chemistry, physics, biology, zoology, electrical and physiography laboratories, medical college, hospital laboratory equipment, industrial and commercial laboratory equipment. Engineering service gratis.

Charles P. Rogers & Co., Inc., 14-16 East 33rd St., New York, N. Y.
A Guide to Buying Quality Furniture, Beds and Bedding. Booklet. 4 x 6 in. Illustrated. Describes the manufacture of good furniture as compared with the ordinary kind.

GLASS CONSTRUCTION

Mississippi Wire Glass, 220 Fifth Avenue, New York.
Mississippi Wire Glass. Catalog. 3⅞ x 8½ in. 32 pp. Illustrated. Covers the complete line.

GRANITE—See Stone, Building

HARDWARE

Cutler Mail Chute Company, Rochester, N. Y.
Cutler Mail Chute Model F. Booklet. 4 x 9¼ in. 8 pp. Illustrated.

Back of this
Barrett Specification Roof
is a 20 Year Bond
UNITED STATES FIDELITY & GUARANTY COMPANY
BALTIMORE, MD.
JOHN R. BLAND, PRESIDENT
Capital Stock $4,500,000.00
No.
Barrett Specification Roof
TYPE "AA"
20-Year Guaranty Bond
Know all men by these presents
ATTEST.
ATTEST.

Barrett Specification 20-Year Bonded Roof on Flamingo Hotel, Miami, Fla. Architect: Rubush & Hunter, Indianapolis, Ind. Gen'l Cont.: The Flamingo Co., Miami. Roofer: Cureton Lumber Co., Miami.

Regardless of Climate—the Bond Holds Good

There are no climatic restrictions on the Surety Bond back of the Barrett Specification Roof.

Take the roof on the Flamingo Hotel, in Miami, for instance.

Florida *winters,* of course, are easy on roofs. There's no snow, no frost, and practically no rain. But the *summers* are different. Miami's annual rainfall is exceptionally heavy—averaging over 63 inches. Most of it comes in the four warm months, June to September. And combined with this excessive rainfall are continuous high humidity and the intense heat of the tropical summer sun. Here is a roof-test even more rigorous than a Northern winter.

But all climates are alike to the Barrett Specification Roof. So the roof that protects the beautiful Flamingo Hotel, in Miami, from Florida summers, and the roof that protects the palatial new Mount Royal Hotel, in Montreal, from Canadian winters, are *both* bonded against repair and maintenance expense.

Two Types of Bonded Roofs

There are two types of Barrett Specification Bonded Roofs—Type "AA," bonded for 20 years; and Type "A," bonded for 10 years.

We will gladly send you on request complete information regarding these bonded roofs and copies of The Barrett Specifications. Kindly address our nearest office.

New York Chicago Philadelphia Boston
Detroit New Orleans Birmingham Kansas City
Bangor Youngstown Toledo Columbus
Denver

The Barrett Company

St. Louis Cleveland Cincinnati Pittsburgh
Minneapolis Dallas Salt Lake City Atlanta
Richmond Baltimore Omaha Houston

THE BARRETT COMPANY, LIMITED: Montreal Toronto Winnipeg Vancouver St. John, N. B. Halifax, N. S.

Residence and garage roofed with Illinois Zinc Shingles

Aged Beauty Plus Maximum Durability

THE beauty of the Illinois Zinc Shingles is in their simplicity of design and their "Cape Cod Gray" color. Preoxidized to resemble a weathered gray, these zinc shingles do not have to wait for years of exposure in the salty air from the ocean to get that same aged beauty found only on the roofs of those famous Cape Cod houses. The architect can now specify Illinois Zinc Shingles, and give to the client a roof whose durability has been demonstrated by from fifty to over a hundred years of use on many of the finest residences and public buildings in Europe and America; whose conservative design and beauty of color has caused it to be called the Cape Cod Gray Shingle; and whose low price, without any additional cost for upkeep or repairs, has made it, probably, the most economical form of shingled roofing today. We will give you the benefit of our knowledge acquired by years spent in studying zinc as applied to roofing. Write us for samples and specifications of the Illinois Zinc Shingles.

ILLINOIS
ZINC SHINGLES
"THE ROOF THAT'S ALWAYS NEW"

Note: There are hundreds of houses in the United States now roofed with Illinois Zinc Shingles; undoubtedly some of them are near you. We will gladly furnish you with locations so that you can personally examine these roofs.

ILLINOIS ZINC COMPANY

332 So. Michigan Ave., Chicago, Ill.
280 Broadway, New York City
1331 Filbert St., Philadelphia, Pa.
Smelters and Rolling Mills, Peru, Ill.
Established 1870

Corrugated Zinc Sheets for Roofing and Siding—Illinois Zinc Shingles—Strip or Ribbon Zinc—Slab Zinc (Spelter)—Wide Zinc Sheets
Producers of Electrolytic Slab Zinc guaranteed 99.99% pure zinc. The highest grade of Slab Zinc produced in the world

ANACONDA
from mine to consumer
TRADE MARK

Why Brass Pipe ?

Because it endures—it will not split. Water will not rust it. It will not clog or leak. Money spent in tearing out and replacing corrodible pipe is saved.

Because it insures—rugs and furnishings are safe from stains of leaking water. Ceilings will not fall or be made unsightly. The homeowner will be spared the annoyance of rusty water in his bathtub. No fear of torn out walls and ripped up floors. None of the confusion and expense that follow in the footsteps of the repair man.

And the added cost is almost negligible. Less than 1 per cent of building cost will cover the extra cost of Anaconda Brass Pipe over corrodible pipe. The difference is about $75 for a $15,000 house. For a 12-story apartment house, in which the total plumbing cost is $60,000, the added cost of Anaconda Brass Pipe is approximately $1,000.

Anaconda Brass Pipe is trademarked and guaranteed.

Publication B I includes detailed figures on installation costs and installation practice. It will be sent free on request.

THE AMERICAN BRASS COMPANY
GENERAL OFFICES, WATERBURY, CONN.
MILLS AND FACTORIES
Ansonia, Conn. Torrington, Conn. Waterbury, Conn. Buffalo, N.Y. Kenosha, Wis.
OFFICES AND AGENCIES
New York Philadelphia Boston Providence Pittsburgh
Cleveland Cincinnati Detroit Chicago St. Louis San Francisco
ANACONDA AMERICAN BRASS LIMITED, NEW TORONTO, ONTARIO, CANADA

ANACONDA
BRASS PIPE

SELECTED LIST OF MANUFACTURERS' PUBLICATIONS—*Continued from page 76*

HARDWARE—Continued

McKinney Mfg. Co., Pittsburgh, Pa.

McKinney Cabinet Hardware. Catalog. 6 x 9 in. 32 pp. Illustrated. Describes complete line of hardware for cabinet and furniture work.

McKinney Hardware for Sliding Doors. Booklet. 6 x 9 in. 18 pp. Illustrated. Describes different types of sliding door hardware.

Stanley Works, The, New Britain, Conn.

Wrought Hardware. Catalog. BJ10. 6½ x 10 in. Color plates. Shows all of the Stanley Works products made of steel from their own mills.

Vonnegut Hardware Co., Indianapolis, Ind.

Von Duprin Self-Releasing Fire Exit Devices. Catalog. 12F 8 x 11 in. 41 pp. Illustrated.

"Saving Lives." Booklet. 3¼ x 6 in. 16 pp. Illustrated. A brief outline why Self-Releasing Fire Exit Devices should be used.

HEATING EQUIPMENT

American District Steam Company, North Tonawanda, N. Y.

Bulletin No. 150-AF. 6 x 9 in. 32 pp. Illustrated. Describes the Adsco System of Atmospheric Steam Heating and explains how it saves 20 to 30% of fuel cost. Tells how to figure radiation.

Catalog No. 21-AF. 6 x 9 in. 200 pp. Illustrated. Lists and describes the full line of equipment and devices manufactured for use on underground and interior steam mains, expansion joints, steam meters, condensation meters, traps, flange fittings, angle fittings, manhole curbs, alignment guides, etc.

Clarage Fan Company, Kalamazoo, Mich.

Catalog No. 52. 8½ x 11 in. 84 pp. Illustrated. Describes Clarage Kalamazoo Multiblade Fans and Heaters for use in schools, churches, hospitals and industrial plants. Engineering data, capacity tables and dimensions included.

James B. Clow & Sons, 534 S. Franklin Street, Chicago, Ill.

Gasteam. Catalog. 6 x 9 in. 16 pp. Illustrated. New radiator using gas for fuel.

Excelso Specialty Works, 119 Clinton St., Buffalo, N. Y.

Excelso Water Heater. Booklet. 12 pp. 3 x 6 in. Illustrated. Describing the new Excelso method of generating domestic hot water in connection with heating boilers. (Firepot Coil eliminated.)

Gorton & Lidgerwood Co., 96 Liberty Street, New York, N. Y.

Gorton Self-Feeding Boilers. Booklet. 4¼ x 7¼ in. 32 pp. Illustrated. Descriptions, specifications and prices.

Johnson Service Company, 149 Michigan St., Milwaukee, Wis.

Regulation of Temperature and Humidity. Booklet. 11¼ x 8½ in. 64 pp. Illustrated. Describes Johnson system of pneumatic, automatic regulation of temperature and humidity, and illustrates thermostats, valves, air compressors, dampers and other parts.

Johnson Electric Thermostats, Valves and Controllers. Booklet. 6⅛ x 3½ in. 24 pp. Illustrated. Excellent plates showing electric thermostats and controllers.

Kelsey Heating Company, James St., Syracuse, N. Y.

Booklet No. 5. 4 x 9 in. 32 pp. Illustrated. A dealers' booklet showing the Kelsey Warm Air Generator Method of warming and distributing air. Gives dimensions, heating capacities, weights, kind of coal recommended, and shows the mechanical and gravity system of heating homes, churches and schools.

Monroe Pipeless Booklet. 4½ x 8 in. 20 pp. Illustrated.

Monroe Tubular Heater. Booklet. 4½ x 8 in. 20 pp. Illustrated. General Booklet giving capacities, dimensions, weights, etc.

Syracuse Pipeless Booklet. 4½ x 8 in. 12 pp. Illustrated. General Booklet, giving sizes and capacities.

Kewanee Boiler Co., Kewanee, Ill.

Kewanee on the Job. Catalog. 8½ x 11 in. 80 pp. Illustrated. Showing installations of Kewanee boilers, water heaters, radiators, etc.

Catalog No. 73. 6 x 9 in. 35 pp. Illustrated. Describes Kewanee steel power boilers with complete specifications.

Minneapolis Heat Regulator Company, Minneapolis, Minn.

The Heart of the Heating Plant. Catalog. 6 x 9 in. 20 pp. Illustrated. Describing the Minneapolis Heat Regulator, its construction, application and operation for the automatic control of temperature where coal, gas, fuel oil or street steam is used.

Page Boiler Company, The Wm. H., 141 West 36th Street, New York, N. Y.

Page Boilers. Catalog. 4½ x 8 in. 84 pp. Illustrated. Descriptions with specifications of the Volunteer Round and Monarch Square Sectional Boilers; also the Monarch Up-Draft and Down-Draft Smokeless Boiler; with method for apportioning sise of boiler and radiation, and other heating data.

United States Radiator Corporation, Detroit, Mich

The Complete Line. Catalog. 3¾ x 6½ in. 269 pp. Illustrated. New edition, intended as a handy reference book for those who design or install heating and ventilating systems.

Capitol Smokeless Type Boilers. Booklet. 8½ x 11 in. 12 pp. Illustrated. Describing a new type of low-pressure heating boiler which burns soft coal without smoke.

HEAT REGULATORS—See Heating Equipment

HOISTS

Gillis & Geoghegan, 544 West Broadway, New York.

Hoists for Industrial Plants. Booklet. 6 x 8¾ in. 8 pp. Illustrated. Labor saving service in the lifting or lowering of lighter loads, through the use of G & G Telescopic and Non-telescopic Hoists.

Removing Ashes. Booklet. 6 x 8¾ in. 6 pp. Illustrated. Removing ashes from boiler room directly to wagon by electrically operated Telescopic Hoists.

HOLLOW TILE—See Tile, Hollow

INSULATION

Bishopric Manufacturing Co., 103 Este Ave., Cincinnati, Ohio.

For All Time and Clime. Booklet. 6 x 9 in. 48 pp. Illustrated. Describing the use of Bishopric stucco base and Bishopric plaster base.

INSULATION—Continued

Philip Carey Co., The, Cincinnati, Ohio.

Carey Asbestos and Magnesia Products. Catalog. 6 x 9 in. 72 pp. Illustrated.

Johns-Manville, Inc., Madison Ave. and 41st St., New York, N. Y.

Johns-Manville Service to Power Users. Catalog. 8½ x 11 in. 150 pp. Illustrated. Contains valuable data on all forms of insulations, packings, steam traps, high temperature cements, brake locks and linings, also general technical data.

United States Gypsum Company, 205 West Monroe St., Chicago, Ill.

Bulletin. 8½ x 11 in. Details and specifications for insulating roofs to prevent condensation.

United States Mineral Wool Co., 280 Madison Ave., New York, N. Y.

The Uses of Mineral Wool in Architecture. Booklet. 5¼ x 6⅝ in 24 pp. Illustrated. Describes properties of mineral wool as insulation against heat, frost, sound. Specifications and section drawings for use as a fireproofing. Rule for estimate and cost.

KITCHEN EQUIPMENT

Wm. M. Crane Company, 16–20 West 32nd St., New York, N. Y.

VULCAN Gas Ranges and Appliances. Booklet. 5 x 8 in. 50 pp. Illustrated. Describes complete line, including VULCAN SMOOTH-TOP Compact Cabinet Gas Ranges for kitchens in the home.

VULCAN Gas Equipment for Hotels, Hospitals, Restaurants, etc. Booklet. 5 x 8 in. 45 pp. Illustrated. Equipment for heavy-duty cooking requirements, with information of value to architects in planning kitchens.

LATH, METAL AND REINFORCING

North Western Expanded Metal Co., 934 Old Colony Building, Chicago, Ill.

Designing Data. Catalog. 6 x 9 in. 94 pp. Illustrated. Describes most efficient use of Econo Expanded Metal Reinforcing.

Formless Concrete Construction. Catalog. 6 x 9 in. 80 pp. Illustrated. Describes use of T-Rib Chanelath, a form and reinforcing for concrete.

LEADERS AND GUTTERS

Copper & Brass Research Assn., 25 Broadway, New York, N. Y.

Copper Roofing. Booklet. 8½ x 11 in. 32 pp. Illustrated. Gives information regarding weights of various roofing materials. Describes up-to-date practice and methods of laying copper roofs; decorative effects and how to obtain them. Gives specifications and details. Flashings, reglets, gutters and leaders, cornices and copper-covered walls.

MAIL CHUTES

Cutler Mail Chute Company, Rochester, N. Y.

Cutler Mail Chute Model F. Booklet. 4 x 9¼ in. 8 pp. Illustrated.

MANTELS

Arnold & North, Inc., 124 East 41st St., New York, N. Y.

Booklet. 5 x 6 in. Contains photographic reproductions of a variety of old English and Colonial mantelpieces with complete information as to sizes and prices.

Arthur Todhunter, 414 Madison Ave., New York, N. Y.

Mantels and Fireplace Equipment. Booklet. 8½ x 11 in. Illustrated. Separate sheet plates showing mantels installed and furnished, also andirons and grates grouped with suitable pieces, also lanterns, weather-vanes and hand-wrought hardware. All sizes and descriptions given on each plate.

MARBLE

The Georgia Marble Company, Tate, Ga. New York office, 1328 Broadway.

Why Georgia Marble is Better. Booklet. 3⅝ x 6 in. Gives analysis, physical qualities, comparison of absorption with granites, opinions of authorities, etc.

Convincing Proof. Booklet. 3⅝ x 6 in. 8 pp. Classified list of buildings and memorials in which Georgia Marble has been used, with names of Architects and Sculptors.

Tompkins-Kiel Marble Company, 505 Fifth Ave., New York, N. Y.

Reproductions in natural colors of imported and domestic marbles and stone for interior and exterior uses.

Bulletins, 9¾ x 12¾ in., illustrating buildings of various types in which Tompkins-Kiel Marble Company's imported and domestic marbles and stone have been used.

Vermont Marble Company, Adv. Dept., Proctor, Vt.

The Book of Vermont Marble. Booklet. 8½ x 11 in. 68 pp. Illustrated. A reference book for architects, describing various kinds of Vermont Marble, with illustrations and details.

Marble Banks and Modern Business. Booklet. 7¾ x 10½ in. 48 pp. Illustrated. Contains many pictures of important Vermont Marble bank work, with certain tests and analyses relating to the product.

METAL LATH—See Lath, Metal and Reinforcing

METALS

American Brass Company, Waterbury, Conn.

Illustrated pamphlet describes the use and adaptability of extruded architectural shapes to meet the architect's design.

American Sheet & Tin Plate Co., Frick Building, Pittsburgh, Pa.

Reference Book. Pocket Ed. 2½ x 4½ in. 168 pp. Illustrated. Covers the complete line of Sheet and Tin Mill Products.

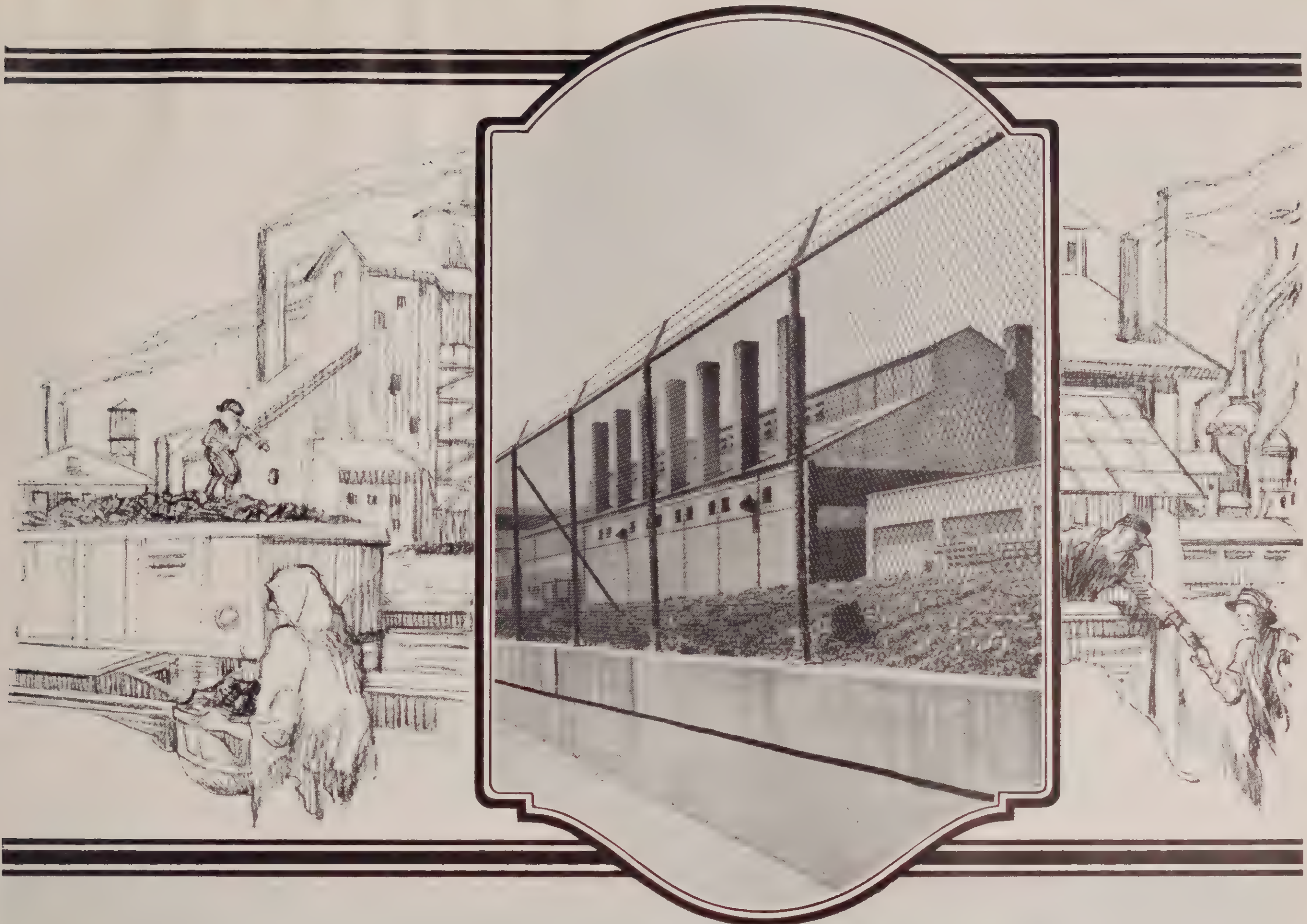
Apollo and Apollo-Keystone Galvanised Sheets. Catalog. 8½ x 11 in. 20 pp. Illustrated.

Research on the Corrosion Resistance of Copper Steel. Booklet. 8½ x 11 in. 24 pp. Illustrated. Technical information on results of atmospheric corrosion tests of various sheets under actual weather conditions.

Facts Simply and Briefly Told. Booklet. 8½ x 11 in. 16 pp. Illustrated. Non-technical statements relating to Keystone Copper Steel.

Black Sheets and Special Sheets. Catalog. 8½ x 11 in. 28 pp. Illustrated. Describes standard grades of Black and Uncoated Sheets, together with weights, bundling tables, etc.

Bright Tin Plates. Catalog. 8½ x 11 in. 16 pp.



The Factory Is Incomplete

—Without a Protection Fence

To the architect who specializes in factory design, the protection fence is a natural requisite—a part of the plant that must be included in original specifications.

PAGE PROTECTION FENCE beautifies the grounds; compels respect for the privacy of the property; perpetuates the work of the architect.

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SELECTED LIST OF MANUFACTURERS' PUBLICATIONS — *Continued from page 78*

METALS—Continued

Bridgeport Brass Company, Bridgeport, Conn.
Seven Centuries of Brass Making. Booklet. 10½ x 8 in. 78 pp. Illustrated in color. A brief history of the ancient art of Brass Making and its early (and even recent) method of production—contrasted with that of the Electric Furnace Process—a twentieth century achievement of the Bridgeport Brass Company.
Tested High-Speed Brass Rod. Booklet. 10½ x 8 in. 16 pp. Illustrated. Short treatise on the manufacture of Brass Rod for use in Screw Machines, with particular reference to improvements originated by the Bridgeport Brass Company.

Copper & Brass Research Assn., 25 Broadway, New York, N. Y.
Copper Roofing. Booklet. 8½ x 11 in. 32 pp. Illustrated. Gives information regarding weights of various roofing materials. Describes up-to-date practice and methods of laying copper roofs; decorative effects and how to obtain them. Gives specifications and details. Flashings, reglets, gutters and leaders, cornices and copper-covered walls.

METAL TRIM—See Doors, Windows and Trim, Metal

MORTAR COLORS

Clinton Metallic Paint Co., Clinton, N. Y.
Clinton Mortar Colors. Booklet. 3½ x 6⅝ in. 8 pp. Illustrated Complete description of Clinton Mortar Colors with color samples.

PAINTS, STAINS, VARNISHES AND WOOD FINISHES

Cabot, Inc., Samuel, Boston, Mass.
Cabot's Creosote Stains. Booklet. 4 x 8½ in. 16 pp. Illustrated.

The Hockaday Company, 1823 Carroll Ave., Chicago, Ill.
Paint Mileage. Book. 8 x 10½ in. 56 pp. Illustrated. A reference book on interior painting. Describes use of paint over all sorts of surfaces, with illustrations of buildings where Hockaday has been specified. Hockaday service explained.

National Lead Company, 111 Broadway, New York, N. Y.
Handy Book on Painting. Book. 5½ x 3¼ in. 100 pp. Gives directions and formulas for painting various surfaces of wood, plaster, metal, etc., both interior and exterior.
Red Lead in Paste Form. Booklet. 6¼ x 3½ in. 16 pp. Illustrated. Directions and formulas for painting metals.
Came Lead. Booklet. 8¾ x 6 in. 12 pp. Illustrated. Describes various styles of lead cames.
Cinch Anchoring Specialties. Booklet. 6 x 3½ in. 20 pp. Illustrated. Describes complete line of expansion bolts.

The Ripolin Company, Cleveland, Ohio
Ripolin Specification Book. 8 x 10¼ in. 12 pp. Complete specifications and general instructions for the application of Ripolin, the original Holland enamel paint. Also directions for proper finishing of wood, metal, plaster, concrete, brick and other surfaces.

Ruberoid Co., The (formerly the Standard Paint Co.), 95 Madison Avenue, New York, N. Y.
Preservative Coatings. Booklet. 6 x 9 in. 15 pp. Illustrated Presents in a concise manner the properties and uses of the Ruberoid Company's various paint preparations.

Smith & Co., Edward, P. O. Box 76, City Hall Station, New York, N. Y.
Architect's Hand Book. 4¾ x 7½ in. 24 pp. Specifications and suggestions for painting, varnishing, enameling, etc.

Sonneborn Sons, Inc., L., Dept. 4, 116 Fifth Avenue, New York.
Paint Specifications. Booklet. 8½ x 10¾ in. 4 pp.

The Truscon Laboratories, Detroit, Mich.
Architects' Specification Handbook. 8½ x 11 in. 108 pp. Complete specifications covering Waterproofings, Dampproofings, Oilproofings, Technical Finishes, Steel Paints, Mill White Paints, Floor Hardeners and Varnishes.

PARTITIONS

Improved Office Partition Company, 25 Grant St., Elmhurst, L. I.
Telesco Partition. Catalog. 8¼ x 11 in. 14 pp. Illustrated. Shows typical offices laid out with Telesco partitions, cuts of finished partition units in various woods. Gives specifications and cuts of buildings using Telesco.
Detailed Instructions for erecting Telesco Partitions. Booklet. 24 pp. 8½ x 11 in. Illustrated. Complete instructions, with cuts and drawings, showing how easily Telesco Partition can be erected.

Richards-Wilcox Mfg. Co., Aurora, Ill.
Partitions. Booklet. 7 x 10 in. 32 pp. Illustrated. Describes complete line of track and hangers for all styles of sliding, parallel, accordion and flush door partitions.

The J. G. Wilson Corporation, 11 East 36th St., New York, N. Y.
Folding Partitions. Booklet. 8½ x 11½ in. 16 pp. Illustrated. Covers the field of folding partitions for churches, schools, hotels, clubs and public institutions.
Rolling Partitions, Hygienic and Disappearing Door Wardrobes. Booklet. 6 x 9 in. 32 pp. Illustrated. Describes rolling partitions, particularly in churches and schools, and wardrobes as installed in schools and public institutions.

PARTITIONS, WIRE

Page Steel & Wire Company, Bridgeport, Conn.
Page Standard Panel Partition. Booklet. 8½ x 11 in. 6 pp. Illustrated. Uses and advantages of Wire Partition, with Page Standard Panel Specifications. Valuable to architects.

PIPE

American Brass Company, Waterbury, Conn.
Illustrated pamphlet giving tables of weights and price-lists devoted to Brass and Copper Pipe in iron pipe and plumbers' sizes.

PIPE—Continued

Bridgeport Brass Company, Bridgeport, Conn.
Bulletin No. 15. Brass Pipe and Piping. Booklet. 8 x 10½ in. 48 pp. Illustrated. When and how to use Brass Pipe. Brass Pipe compared with iron and steel pipe for hot water service. Corrosion. Description of manufacture of Bridgeport Plumrite Brass Pipe.

A. M. Byers Company, 235 Water St., Pittsburgh, Pa.
Bulletin 26-A. "What Is Wrought Iron?" 8 x 10¾ in. 40 pp. Illustrated. Descriptions of materials and processes employed in manufacturing Byers genuine wrought iron pipe. Factors influencing corrosion. Gives table of pipe sizes, weights, dimensions, tests, etc., and tabulated records of the life of iron and steel pipe in various kinds of service.
Bulletin 30. An Investigation of Pipe Corrosion in Hot Water Service. 8 x 10¾ in. 20 pp. Illustrated. Shows service records of iron, steel and brass pipe used for hot and cold water supply lines in 129 Pittsburgh Apartment Buildings.
Bulletin 32. Corrosion of Wrought Iron, Cast Iron and Steel Pipe in House Drainage Systems. 8 x 10¾ in. 32 pp. Illustrated. Data obtained through investigations conducted in New York and Chicago by Dr. Wm. P. Gerhard, C.E., and Thomas J. Claffy, Asst. Chief San. Inspector, city of Chicago.
Bulletin 38. The Installation Cost of Pipe. 32 pp. 8 x 10¾ in. Illustrated. Cost analyses of 20 different pipe installations, in power and industrial plants, office buildings, hotels, residences, etc.

Clow & Sons, James B., 534 S. Franklin Street, Chicago, Ill.
Catalog "A." 4 x 6½ in. 706 pp. Illustrated. Shows a full line of steam, gas and water works supplies.

National Tube Co., Frick Building, Pittsburgh, Pa.
National Bulletin No. 11, History, Characteristics and Advantages of National Pipe. Catalog. 8½ x 11 in. 48 pp. Illustrated.

Reading Iron Company, Reading, Pa.
Reading Genuine Wrought Iron Pipe in the Making and in Service. Bulletin No. 1. 8½ x 11 in. 32 pp. Illustrated. History of the Reading Iron Company. Origin of wrought iron—description of each process of manufacture of both buttweld and lapweld pipe—Reading Pipe in various fields.
Book of Standards. Booklet. 5 x 7 in. 48 pp. Illustrated. Complete tables showing dimensions, tests and list prices on each of the 552 different kinds of Reading Tubular goods. Two simple tests for distinguishing genuine wrought iron pipe.
The Painted Molecule. Booklet. 4 x 9 in. 8 pp. Illustrated. A brief, non-technical description of the reasons for the longer life of Reading Iron Pipe, with instances of actual service.
The Ultimate Cost. Booklet. 5¼ x 7¼ in. 24 pp. Illustrated in two colors. A comparison in actual figures of the initial cost and the ultimate cost of plumbing and heating systems in several kinds of homes.

PLUMBING EQUIPMENT

American Brass Company, Waterbury, Conn.
Benedict Nickel. Illustrated pamphlet descriptive of Benedict Nickel White Metal for high-grade plumbing fixtures.

Bridgeport Brass Company, Bridgeport, Conn.
Plumbing Supplies. Booklet. 10½ x 8 in. 20 pp. Illustrated. Describes a few of the different plumbing supplies manufactured by the Bridgeport Brass Company.

Brunswick-Balke-Collender Co., 623 S. Wabash Avenue, Chicago, Ill.
Whale-bone-ite Seat. Booklet. 3½ x 6¼ in. 4 pp. Illustrated.
Whale-bone-ite Seat. Booklet. 3½ x 6¼ in. 8 pp. Illustrated.

Clow & Sons, James B., 534 S. Franklin Street, Chicago, Ill.
Catalog "M." 9¼ x 12 in. 184 pp. Illustrated. Shows complete line of plumbing fixtures for Schools, Railroads and Industrial Plants

Crane Company, 836 S. Michigan Avenue, Chicago, Ill.
Crane Products in World Wide Use. Catalog. 5 x 9½ in. 24 pp. Illustrated.
Plumbing Suggestions for Home Builders. Catalog. 3 x 6 in. 80 pp. Illustrated.
Plumbing Suggestions for Industrial Plants. Catalog. 4 x 6½ in. 43 pp. Illustrated.

Eljer Company, 15 E. Van Buren St., Chicago, Ill.
The Standardized Sixteen. Booklet. 3¾ x 6¾ in. 32 pp. Illustrated. Describes fully the complete Eljer line of standardized plumbing equipment, with diagrams, weights, measurements and copious illustrations.

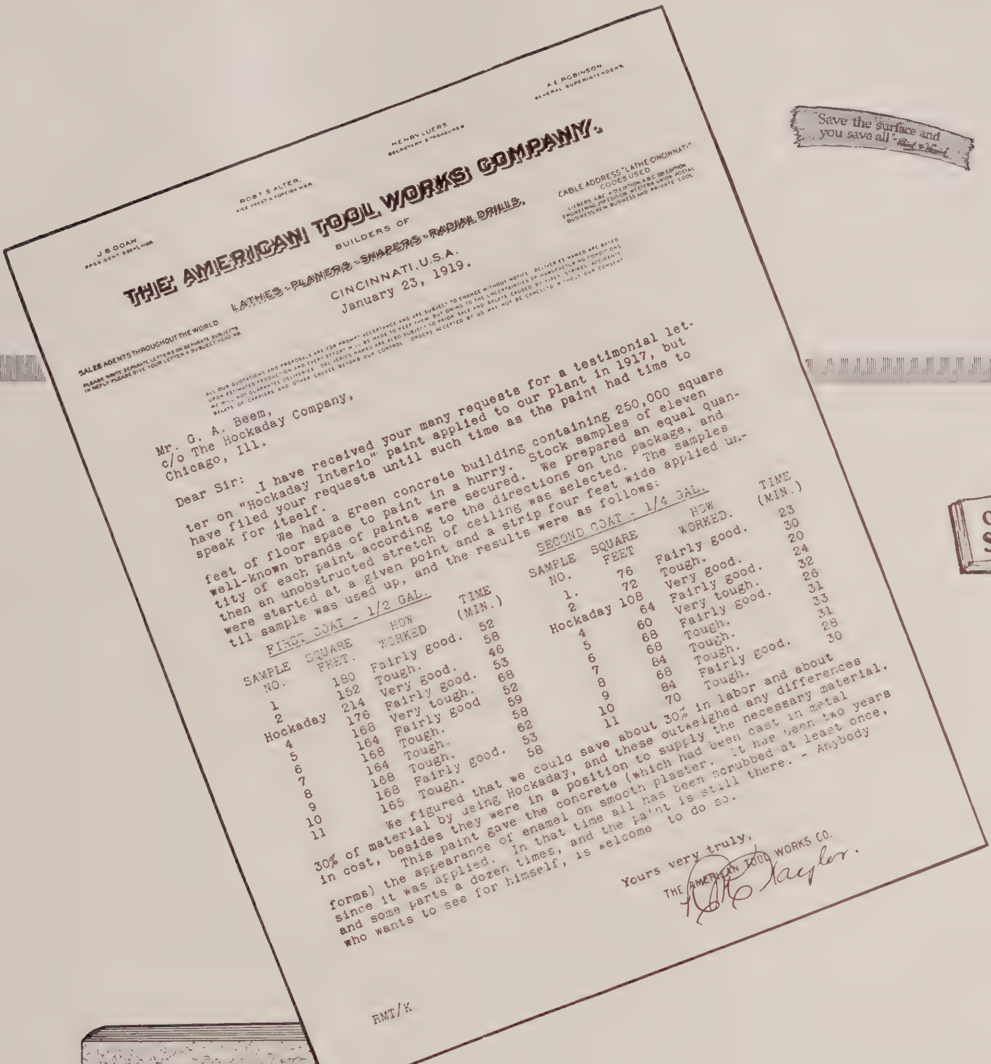
Kohler Co., Kobler, Wis.
Catalog F. 7½ x 10⅝ in. 216 pp. Illustrates and describes the complete line of Kohler trade-marked plumbing ware.
Roughing-In Measurement Binder, 5 x 8 in., containing loose-leaf sheets on all staple fixtures.

Maddock's Sons Co., Thomas, Trenton, N. J.
Highest Grade Standardized Plumbing Fixtures for Every Need. Catalog. 5 x 7½ in. 94 pp. Illustrated. Covers the complete line.
Bathroom Individuality. Booklet. 6 x 9 in. 28 pp. Illustrated. Showing view of complete bathrooms with complete descriptions of floor plans.
Specifications for plumbing fixtures. Booklet. 9 x 12 in. 8 pp. Tables of specifications for industrial buildings, schools, apartments, hotels, etc.

Speakman Company, Wilmington, Del.
Speakman Showers and Fixtures. Catalog. 4½ x 7½ in. 250 pp. Illustrated. Catalog of Modern Showers and Brass Plumbing Fixtures, with drawings showing layouts, measurements, etc.
Toned Up In Ten Minutes. Booklet. 7½ x 10½ in. 16 pp. Illustrated. Modern Showers and Washups for Industrial Plants, showing the sanitary method of washing in running water.

Wolff Manufacturing Company, 255 No. Hoyne Ave., Chicago, Ill.
Plumbing Suggestions. Catalog. 3¼ x 6 in. 50 pp. Illustrated. Illustrating, describing and pricing Wolff Quality Plumbing Fixtures for residential installation.

Why Hockaday Was Selected From a Field of Eleven



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ALL OUR QUOTATIONS AND PROPOSALS ARE FOR PROMPT ACCEPTANCE AND ARE SUBJECT TO CHANGE WITHOUT NOTICE. DELIVERIES NAMED ARE BASED UPON ESTIMATED PRODUCTION AND EVERY EFFORT WILL BE MADE TO KEEP THEM BUT OWING TO THE UNCERTAINTIES OF MANUFACTURING CONDITIONS WE WILL NOT GUARANTEE DELIVERIES. DELIVERIES NAMED ARE ALSO SUBJECT TO PRIOR SALE AND DELAYS CAUSED BY FIRES, STRIKES, ACCIDENTS, DELAYS OF CARRIERS AND OTHER CAUSES BEYOND OUR CONTROL. ORDERS ACCEPTED BY US MAY NOT BE CANCELLED WITHOUT OUR CONSENT.

January 23, 1919.

Mr. G. A. Beem,
c/o The Hockaday Company,
Chicago, Ill.

Dear Sir:

I have received your many requests for a testimonial letter on "Hockaday Interio" paint applied to our plant in 1917, but have filed your requests until such time as the paint had time to speak for itself.

We had a green concrete building containing 250,000 square feet of floor space to paint in a hurry. Stock samples of eleven well-known brands of paints were secured. We prepared an equal quantity of each paint according to the directions on the package, and then an unobstructed stretch of ceiling was selected. The samples were started at a given point and a strip four feet wide applied until sample was used up, and the results were as follows:

FIRST COAT - 1/2 GAL.

SAMPLE NO.	SQUARE FEET.	HOW WORKED	TIME (MIN.)
1	180	Fairly good.	52
2	152	Tough.	58
Hockaday	214	Very good.	46
4	176	Fairly good.	53
5	168	Very tough.	68
6	164	Fairly good	52
7	168	Tough.	59
8	164	Tough.	58
9	168	Tough.	62
10	168	Fairly good.	53
11	165	Tough.	58

SECOND COAT - 1/4 GAL.

SAMPLE NO.	SQUARE FEET	HOW WORKED.	TIME (MIN.)
1.	76	Fairly good.	23
2	72	Tough.	30
Hockaday	108	Very good.	20
4	64	Fairly good.	24
5	60	Very tough.	32
6	68	Fairly good.	26
7	68	Tough.	31
8	84	Tough.	33
9	68	Tough.	31
10	84	Fairly good.	28
11	70	Tough.	30

We figured that we could save about 30% in labor and about 30% of material by using Hockaday, and these outweighed any differences in cost, besides they were in a position to supply the necessary material.

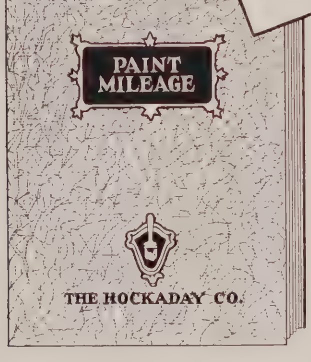
This paint gave the concrete (which had been cast in metal forms) the appearance of enamel on smooth plaster. It has been two years since it was applied. In that time all has been scrubbed at least once, and some parts a dozen times, and the paint is still there. - Anybody who wants to see for himself, is welcome to do so.

Yours very truly,
THE AMERICAN TOOL WORKS CO.
Taylor.

RMT/K

"Save the surface and you save all" – Paint & Varnish

See our Catalogue in SWEET'S



Have You Sent for Your Copy of "Paint Mileage"?

YOU will find it a mighty valuable addition to your office library. "Paint Mileage" was written by an interior painting expert and will do much to help you solve your interior paint problems.

There is no charge whatever for "Paint Mileage." Your request on your letterhead will bring it to you promptly.

The Hockaday Company, 1823-1829 Carroll Avenue, Chicago, Illinois

HOCKADAY

THE WASHABLE FINISH FOR ALL INTERIORS

SELECTED LIST OF MANUFACTURERS' PUBLICATIONS — *Continued from page 80*

PUMPS

Goulds Mfg. Co., The, Seneca Falls, N. Y.

Set of Twenty Bulletins. 7½ x 10⅝ in. 12 to 32 pp. each. Illustrated. Covers complete line of power and centrifugal pumps for all services.

Catalog "K." 6 x 9 in. 216 pp. Illustrated. Covers complete line of smaller size pumps.

RAMPS

Ramp Buildings Corporation, 115 Broad St., New York, N. Y.

The d'Humy Motoramp System of Building Design. Booklet. 8½ x 11 in. 20 pp. Illustrated. Describes the d'Humy system of ramp construction for garages, service buildings, factories, warehouses, etc., where it is desirable to drive motor vehicles or industrial tractors under their own power from floor to floor.

Storage Efficiency of Multi-Floor Garages. Leaflet. 8½ x 11 in. 4 pp. Illustrated. A brief discussion of comparative storage efficiencies of elevator garages, ordinary ramp garages, and d'Humy Motoramp garages.

Visibility. Pamphlet. 8½ x 11 in. 2 pp. Illustrated. Discussion of visibility feature of d'Humy Motoramp System with reference to illustration of one particular installation.

Series of Informal Bulletins on Garage Design. Sent upon request.

ROOFING

American Brass Company, Waterbury, Conn.

Copper Products for Roofing Purposes. Illustrated price-list devoted to copper products, including sheets and rolls, for fabricating into leaders, gutters, flashings, shingles, etc.

American Sheet & Tin Plate Co., Frick Bldg., Pittsburgh, Pa.

Better Buildings. Catalog. 8½ x 11 in. 32 pp. Describes Corrugated and Formed Sheet Steel Roofing and Siding Products, black, painted and galvanized, with directions for application of various patterns of Sheet Steel Roofing in various types of construction.

Copper—Its Effect Upon Steel for Roofing Tin. Catalog. 8½ x 11 in. 28 pp. Illustrated. Describes the merits of high grade roofing tin plates and the advantages of the copper-steel alloy.

Copper & Brass Research Assn., 25 Broadway, New York, N. Y.

Copper Roofing. Booklet. 8½ x 11 in. 32 pp. Illustrated. Gives information regarding weights of various roofing materials. Describes up-to-date practice and methods of laying copper roofs; decorative effects and how to obtain them. Gives specifications and details. Flashings, reglets, gutters and leaders, cornices and copper-covered walls.

Creo-Dipt Company, 1025 Oliver St., North Tonawanda, N. Y.

Architectural Service Sheets. 8½ x 11 in. Illustrated. Working drawings of construction, with standard specifications for design and construction of same.

Illinois Zinc Company, 332 S. Michigan Ave., Chicago, Ill.

Corrugated Sheets of Pure Rolled Zinc. Booklet. 3½ x 8½ in. 8 pp. Illustrated.

Corrugated Sheets of Pure Rolled Zinc. Booklet. 3⅝ x 8½ in. 8 pp. Illustrated. Facts regarding adaptability of zinc for roofing. Specifications of Corrugated Zinc Sheets. Weights per square. Comparative gauge lists. Table of safe loads.

The Roof That's Always New. Booklet. 3⅜ x 6 in. 12 pp. Illustrated. Story of Illinois Zinc Shingles, their everlasting and artistic qualities. Information regarding a complete zinc roof, shingles, starting piece, valley, ridge and hip piece.

"How to Lay Illinois Zinc Shingles." Leaflet. 8½ x 11 in. 4 pp. Illustrated. Instructions for making a roof of Illinois Zinc Shingles using zinc clad nails, zinc starting piece, hip, zinc valleys, zinc ridge and hip pieces.

Johns-Manville, Inc., Madison Ave. & 41st St., New York, N. Y.

Johns-Manville Building Materials. Book. 8½ x 11 in. 100 pp. Illustrated. A comprehensive catalog of various types of roofing for all forms of construction. Details of wall, floor and ceiling insulation; asbestos wood for fireproof construction; waterproofing, etc.

Johns-Manville Asbestos Shingles. Booklet. 8½ x 11 in. 24 pp. Illustrated. This booklet is profusely illustrated in colors, showing some very artistic blends of asbestos shingles with various types of architecture. Contains many valuable suggestions for the architect.

Ruberoid Co., The (formerly the Standard Paint Co.), 95 Madison Avenue, New York, N. Y.

Instructions for Laying Built-up Roofs. Booklet. 8½ x 11 in. Illustrated.

Ruberoid Facts Worth Knowing. Booklet. 6 x 9 in. 16 pp. Illustrated.

Ruberoid Strip-shingle. Booklet. 3½ x 6¼ in. 16 pp. Illustrated in color.

Ruberoid Unit-shingle. Booklet. 3½ x 6¼ in. Illustrated in color.

N. & G. Taylor Company, 300 Chestnut Street, Philadelphia, Pa.

Selling Arguments for Tin Roofing. Booklet. 6¼ x 9¼ in. 80 pp. Illustrated. Describes the various advantages of the use of high grade roofing tin, gives standard specifications, general instructions for the use of roofing tin, illustrates in detail methods of application.

SAFETY TREADS

Universal Safety Tread Co., 40 Court St., Boston, Mass.

The Universal Safety Metal Tread. Booklet. 8½ x 11 in. 16 pp. Illustrated. Describes Safety Treads, with lead inserts in steel base, suitable for use on iron, wood or concrete stairs. Also the flat type, with "Alundum" surface, as well as special ladder treads for ships, power-house and engine-room open string stairways.

SEWAGE DISPOSAL

Kewanee Private Utilities, 442 Franklin St., Kewanee, Ill.

Specification Sheets. 7¾ x 10¼ in. 46 pp. Illustrated. Detailed drawings and specifications covering water supply and sewage disposal systems.

SHEATHING

Bishopric Manufacturing Co., 103 Este Ave., Cincinnati, Ohio

For All Time and Clime. Booklet. 6 x 9 in. 48 pp. Illustrated. Describing the use of Bishopric stucco base and Bishopric plaster base.

STEEL DRESSERS

Janes & Kirtland, 133–135 West 44th St., New York, N. Y.

The White House Line. Booklet. 7¾ x 5¼ in. 24 pp. Illustrated. Describes and illustrates in detail WHITE HOUSE Steel Dressers and some of the separate units. Also contains typical layout and list of some of our clients.

Photographs. 5½ x 3½ in. Views of actual installations in private residences, schools, etc., sent on request.

STONE, BUILDING

Harrison Granite Company, 200 Fifth Avenue, New York, N. Y.

Harrison Granite Company, Clientele. 3¾ x 8¾ in. 24 pp. Illustrated. A partial list of clients with illustrations of examples of monuments and mausoleums.

Indiana Limestone Quarrymen's Association, Box 766, Bedford, Indiana.

Volume 3. Series A-3. Standard Specifications for Cut Indiana Limestone work. 8½ x 11 in. 56 pp. Containing specifications and supplementary data relating to the best methods of specifying and using this stone for all building purposes.

Vol. 1. Series B. Indiana Limestone Library. 6 x 9 in. 36 pp. Illustrated. Giving general information regarding Indiana Limestone, its physical characteristics, etc.

Vol. 27. Series B. Designs for Houses of Indiana Limestone. 8½ x 11 in. 32 pp. Illustrated. Being the best designs submitted in competition for a detached residence faced with Indiana Limestone conducted by *The Architectural Review.*

Volume 4, Series "B." Booklet. 8½ x 11 in. 64 pp. Illustrated. Indiana Limestone as used in Banks.

Tompkins-Kiel Marble Company, 505 Fifth Ave., New York, N. Y.

Reproductions in natural colors of imported and domestic marbles and stone for interior and exterior uses.

Bulletins, 9¾ x 12¾ in., illustrating buildings of various types in which Tompkins-Kiel Marble Company's imported and domestic marbles and stone have been used.

STORE FRONTS

Brasco Manufacturing Company, 5025 So. Wabash Ave., Chicago, Ill.

Brasco Catalog No. 26. 8½ x 11 in. 28 pp. Illustrated. Catalog illustrating and describing members of the Brasco and Brasco-Hester Construction. Includes copper-covered Brasco moulding and the Hester all metal moulding. The wood core of the Brasco has been creosoted and will last as long as the building.

Full-size Details Brasco Copper Store Front Construction. 8¾ x 11 in. Complete in every particular. Show practical installation of the construction.

Full-Size Details Brasco-Hester Copper Store Front Construction. 8¾ x 11 in. This type is all metal or hollow. Has a dust regulator at the base of the plate which does not stick.

Kawneer Co., The, Niles, Mich.

A Collection of Successful Designs. Catalog. 9¼ x 6½ in. 64 pp. Illustrated. Showing by use of drawings and photographs many types of Kawneer Solid Copper Store Fronts.

Zouri Drawn Metals Co., B. J. 10, Chicago Heights, Ill.

Architects' Catalog. 8¾ x 11¼ in. 86 pp. Illustrated. Showing a true copy of the approval of the Underwriters' Laboratories. Showing a proper glazing specification, based on the Underwriters' Report.

Catalog B. J. 8. 6 x 9 in. 68 pp. Illustrated. Key to Getting the People In.

STUCCO BASES

Bishopric Manufacturing Co., 103 Este Ave., Cincinnati, Ohio.

For All Time and Clime. Booklet. 6 x 9 in. 48 pp. Illustrated. Describing the use of Bishopric stucco base and Bishopric plaster base.

STUCCO, MAGNESITE

American Magnestone Corporation, Springfield, Ill.

Catalog. 13 pp. Describes the quality, beauty and strength of Magnestone.

American Materials Company, 101 Park Avenue, New York; Weed Street and Sheffield Avenue, Chicago, Ill.

Elastica, the Stucco of Permanent Beauty. Catalog. 8½ x 11 in. 32 pp. Illustrated. Treatise on composition and application of Elastica Stucco.

Muller & Co., Franklyn R., Waukegan, Ill.

Everlastic Magnesite Stucco. Booklet. 8½ x 11 in.

United States Materials Co., Weed Street and Sheffield Avenue, Chicago, Ill. See American Materials Co.

SARGENT
HARDWARE

First National Bank Building
Detroit, Mich.

Albert Kahn, Architect
Schroeder Hardware Co., Hardware Cont'rs.
Foundation Company, General Contractors

THE HARDWARE EQUIPMENT

of an office building includes corridor locks that safeguard the property of the tenant when the office is closed, and which, with the communicating door locks, and the locks for private offices, provide the necessary convenience of operation during the hours when business is going on, all being grouped in a master-key system that simplifies the care of the building and fully protects the management.

These necessary features are found in the

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LOCKS AND HARDWARE

that have been made especially for office building work, with functions for the different requirements. Designs of SARGENT HARDWARE suitable for these buildings are also made, from which architects can select those which best carry out their ideas.

SARGENT & COMPANY

Makers of Locks and Hardware

NEW HAVEN — CONNECTICUT

NEW YORK CHICAGO

SELECTED LIST OF MANUFACTURERS' PUBLICATIONS — *Continued from page 82*

TERRA COTTA

Atlantic Terra Cotta Co., 1170 Broadway, New York, N. Y.
Questions Answered. Booklet, 7½ x 5¼ in. 32 pp. Illustrated. A synopsis of questions most frequently asked by architects in relation to terra cotta, with brief but complete answers; contains many illustrations.

National Terra Cotta Society, 1 Madison Avenue, New York, N. Y.
Standard Construction, Indexed, bound volume. 10½ x 16 in. 90 pp. 70 Illustrations. Standard forms of terra cotta construction with short article.
"The School." 10½ x 13½ in. 34 pp. 92 Illustrations. Types of school buildings with short descriptive articles. Volume I, brochure series.
"Better Banks." 10½ x 13½ in. Illustrated. Banks of various sizes, with short descriptive articles.
"Terra Cotta Defined." 10½ x 13½ in. Complete description of Terra Cotta and its uses.

The New Jersey Terra Cotta Co., Singer Bldg., New York, N. Y.
Store Fronts in Architectural Terra Cotta. Booklet. 8½ x 11 in. 44 pp. Illustrated. Photographs, measured drawings, designs and illustrations of decorative motifs make up an interesting booklet which will be forwarded upon request.

Northwestern Terra Cotta Co., The, 2525 Clybourn Ave., Chicago, Ill.
Booklet. 8¼ x 11 in. 77 pp. Illustrated. Showing in a concise way the usefulness of terra cotta.

THERMOSTATS—See Heating Equipment

TILE, FLOOR AND WALL

Associated Tile Manufacturers, The, Beaver Falls, Pa.
Bring the Crowds to Your Market. Booklet. 8½ x 11 in. 16 pp. Illustrated. The use of Tile for the modern sanitary market.
Swimming Pools. Booklet. 8½ x 11 in. 32 pp. Illustrated. A handbook on swimming pools and their construction.

TILE, HOLLOW

Hollow Building Tile Association, Dept. 1812, Conway Bldg., Chicago, Ill.
Handbook of Hollow Building Tile Construction. 8½ x 11 in. 104 pp. Illustrated. Complete treatise on most approved methods of hollow tile building construction and fireproofing.

National Fire Proofing Co., 250 Federal St., Pittsburgh, Pa.
Standard Wall Construction Bulletin 174. 8½ x 11 in. 32 pp. Illustrated. A treatise on the subject of hollow tile wall construction.
Industrial Housing Bulletin 172. 8½ x 11 in. 14 pp. Illustrated Photographs and floor plans of typical workingmen's homes.
Natco on the Farm. 8½ x 11 in. 38 pp. Illustrated. A treatise on the subject of fire safe and permanent farm building construction
Fireproof Buildings of Natco Hollow Tile. Booklet. 8½ x 11 in 16 pp. Illustrated. Showing the use of Natco Hollow Tile for private residences.

VALVES

Crane Co., 836 S. Michigan Ave., Chicago, Ill.
No. 50 Steam Pocket Catalog. 4 x 6½ in. 775 pp. Illustrated Describes the complete line of the Crane Co.

Gorton & Lidgerwood Company, 96 Liberty St., New York, N. Y.
Gorton Quarter-Turn Packing-Lock Valves. Booklet. 4¼ x 7¼ in. 32 pp. Illustrated. Describing a new type of valve for all systems of steam, hot water and vacuum heating.

Jenkins Bros., 80 White Street, New York.
The Valve Behind a Good Heating System. Booklet. 4½ x 7¼ in. 16 pp. Color plates. Description of Jenkins Radiator Valves for steam and hot water, and brass valves used as boiler connections.
Jenkins Valves for Plumbing Service. Booklet. 4½ x 7¼ in. 16 pp. Illustrated. Description of Jenkins Brass Globe, Angle Check and Gate Valves commonly used in home plumbing, and Iron Body Valves used for larger plumbing installations.

VENETIAN BLINDS

Burlington Venetian Blind Co., Burlington, Vt.
Venetian Blinds Booklet. 4½ x 7½ in. 32 pp. Illustrated. Describes the "Burlington" Venetian blinds, method of operation, advantages of installation to obtain perfect control of light in the room.

VENTILATION

Clarage Fan Company, Kalamazoo, Mich.
Catalog No. 52. 8½ x 11 in. 84 pp. Illustrated. Describes Clarage Kalamazoo Multiblade Fans and Heaters for use in schools, churches, hospitals and industrial plants. Engineering data, capacity tables and dimensions included.

WALL BOARDS

Carey Co., The Philip, Cincinnati, Ohio.
Carey Board for Better Building. Catalog. 6 x 9 in. 32 pp. Illustrated.

United States Gypsum Company, 205 West Monroe St., Chicago, Ill.
Walls of Worth. Booklet. 8½ x 11 in. 24 pp. Illustrated. Describes Sheetrock, the fireproof wall board, its advantages and uses.

WATERPROOFING

Ruberoid Co., The, 95 Madison Ave., N. Y.
Impervite. Circular. 8½ x 11 in. 4 pp. Illustrated. An integral waterproofing compound for concrete, stucco, cement, mortar, etc.

Sandusky Cement Co., Dept. F., Cleveland, Ohio.
Medusa Waterproofing. Booklet. 6¾ x 9 in. 38 pp. Illustrated.

Sonneborn Sons, Inc., L., 116 Fifth Ave., New York.
Pamphlet. 3¾ x 8¾ inches. 8 pp. Explanation of waterproofing principles. Specifications for waterproofing walls, floors, swimming pools and treatment of concrete, stucco and mortar.

The Truscon Laboratories, Detroit, Mich.
Science and Practice of Integral Waterproofing. 4 x 9 in. 33 pp. Illustrated. Discusses why concrete requires waterproofing and properties an integral waterproofing must possess. Full specifications for waterproofing mass concrete, cement stucco and cement plaster coat.

WATER PURIFIERS

Wallace & Tiernan Company, Newark, N. J.
Protecting N. Y. Water Supply. Booklet. 10 x 7 in. 24 pp. Illustrated. Describes the chlorinating equipment used for sterilizing N. Y. City water supply; also equipment suitable for sterilizing water supplies of municipalities, industrial plants, private residences, etc.

WATER SOFTENERS

Permutit Company, The, 440 Fourth Ave., New York, N. Y.
Permutit-Water softened to No (Zero) Hardness. Booklet. 8½ x 11 in. 32 pp. Describing the original Zeolite process of softening water to zero hardness. An essential for homes, hotels, apartment houses, swimming pools, laundries, textile mills, paper mills, ice plants, etc., in hard water districts.

WATER SUPPLY

Kewanee Private Utilities, 442 Franklin St., Kewanee, Ill.
Specification Sheets. 7¾ x 10¼ in. 46 pp. Illustrated. Detailed drawings and specifications covering water supply and sewage disposal systems.

WINDOW HARDWARE

American Chain Company, Inc., Bridgeport, Conn.
American Sash Chain. Booklet. 3½ x 6 in. 8 pp. Illustrated. Describes and illustrates American Sash Chain and Sash Fixtures.

The Kawneer Company, Niles, Mich.
Kawneer Simplex Windows. Catalog. 8½ x 10½ in. 16 pp. Illustrated. Complete information, with measured details, of Kawneer Simplex Weightless Reversible Window Fixtures, made of solid bronze. Shows installations in residences and buildings of all sorts.
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Samson Cordage Works, Boston, Mass.
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Smith & Egge Mfg. Co., The, Bridgeport, Conn.
Booklet. 6¾ x 9 in. 42 pp. Illustrated. Covers a complete line of chains, hardware and specialties.

WINDOW HARDWARE. CASEMENT

Richards-Wilcox Mfg. Co., Aurora, Ill.
Casement Window Hardware. Booklet. 24 pp. 8½ x 11 in. Illustrated. Shows typical installations, detail drawings, construction details, blue-prints if desired. Describes AiR-Way Multifold Window hardware.

WINDOWS, CASEMENT

Crittall Casement Window Co., 2703 East Atwater Street, Detroit, Mich.
Catalog No. 18. 9 x 12 in. 56 pp. Illustrated.

Hoffman Mfg. Co., Andrew, 900 Steger Building, Chicago, Ill.
Hoffman Casements. Architects' Portfolio. 8½ x 11 in. Loose-leaf. Large scale working details for mill-work and installation.
F. S. Details 20 x 23 in. and 15 x 22 in. Working details for mill-work and installation.
Hoffman Casements Catalogue. 7 x 8½ in. 16 pp. Illustrated.

Hope & Sons, Henry, 103 Park Avenue, New York.
Catalog. 12¼ x 18½ in. 30 pp. Illustrated. Full size details of outward and inward opening casements.

International Casement Company, Jamestown, N. Y.
International Casements. Catalog. 8½ x 11 in. 224 pp. Illustrated. Valuable book, containing photographs and measured drawings of all types of buildings, showing casement windows.

David Lupton's Sons Co., Allegheny Ave. and Tulip St., Philadelphia, Pa.
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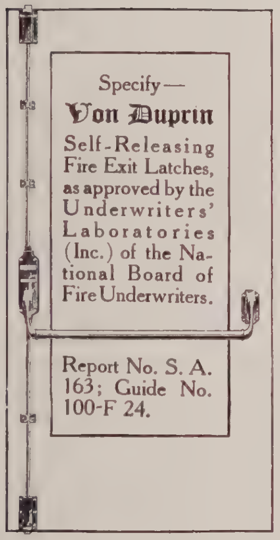

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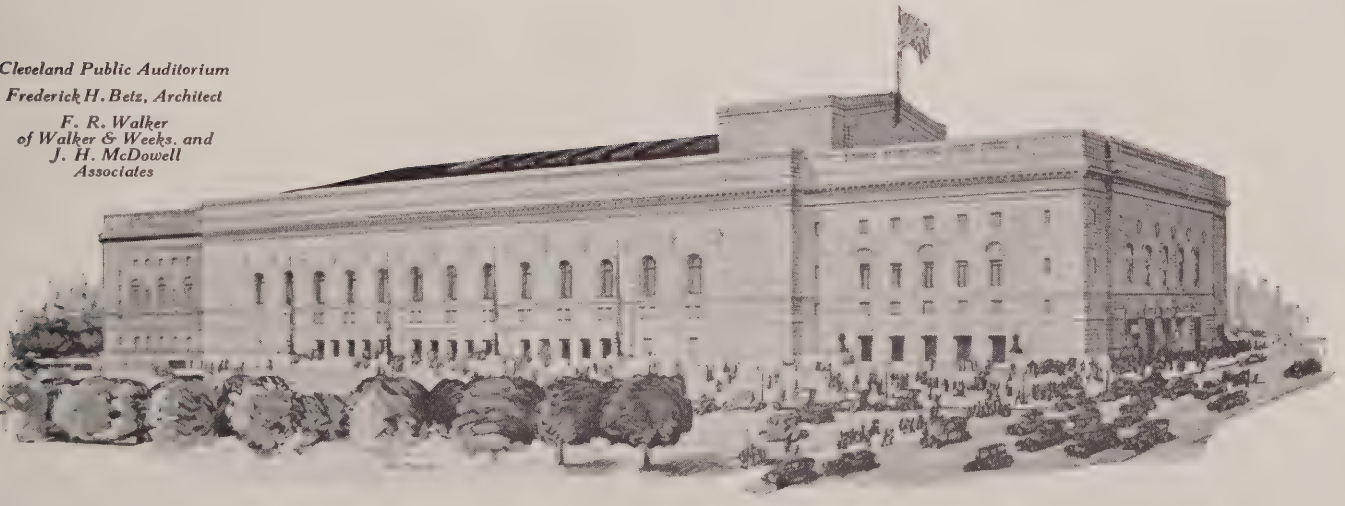

Cleveland Public Auditorium
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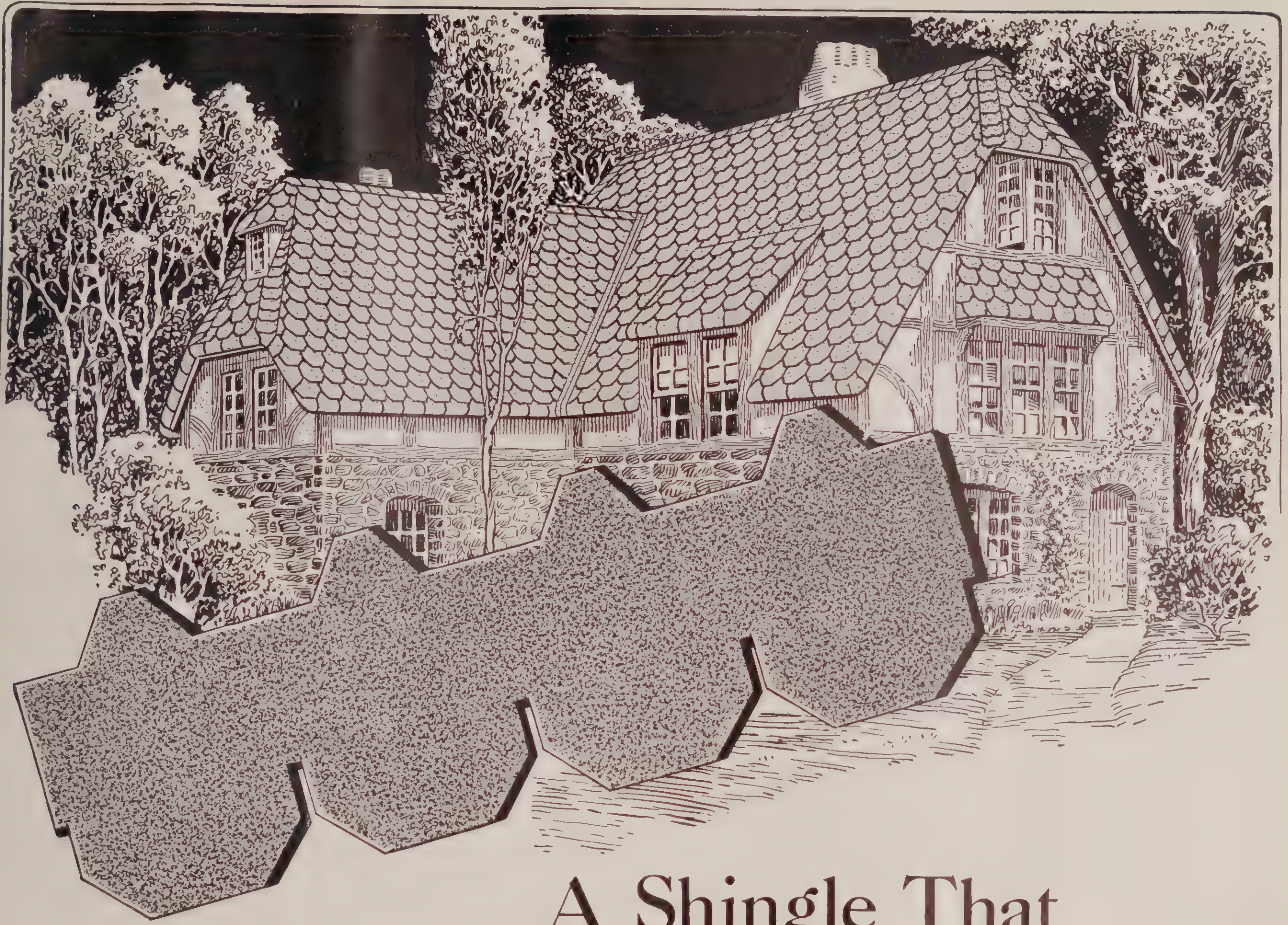

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Ruberoid Strip-shingles have proved their worth upon thousands of roofs. Their use gives your client a pleasing and distinctive roof—one that will stay attractive during its entire long life.

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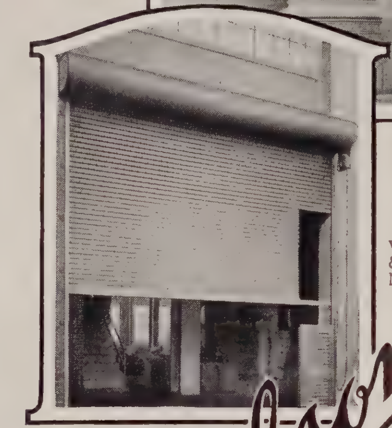

Wilson hand-operated steel door in Pusey & Jones Plant, Wilmington, Delaware. Note application of hinged wicket door.

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Until twenty years ago, cement sacks were filled practically as all other sacks always had been. You had a huge bin of this finer-than-flour material. A workman at the door of the bin hung a sack up, with its mouth open, on a wooden frame and filled it with an ordinary shovel. Then he set it on a scale, and with a hand scoop adjusted the weight of the contents to the exact 94 pounds required, after which he tied the sack by hand and tossed it on a truck to be hauled into a freight car.

That was the way as little as twenty years ago, and no one had thought much of doing it differently.

But now what happens?

The cement is taken from the bin by an automatic conveyor—a moving belt or bucket chain—and elevated and dumped into the hopper of a filling machine. This is a small bin with an elaborate mechanism including a fan inside; and at the bottom of it is a 1-inch spout through which the cement flows like water The filler sits at the spout. Sacks have been brought to him already tied at the top but with an opening guarded by a valve at the bottom. The filler slips the opening over the spout and turns on the cement. When the sack is filled to exactly 94 pounds it tips a scale, automatically turns off the cement, and with a little push from the filler falls on another moving belt that carries it out and drops it at the freight car door.

By the old method, a team of four men could fill and load 1,600 sacks a day. By the new method, a similar team can fill and load 8,000.

The filling machine is costly, and royalties must be paid on the valve sack process, but the new arrangement has meant a considerable labor saving. It has meant especially that the manufacturers have been able to get their product out more promptly to users during the rush period of summer and fall. For in that period labor of the kind required for sacking and loading is generally hard to get.

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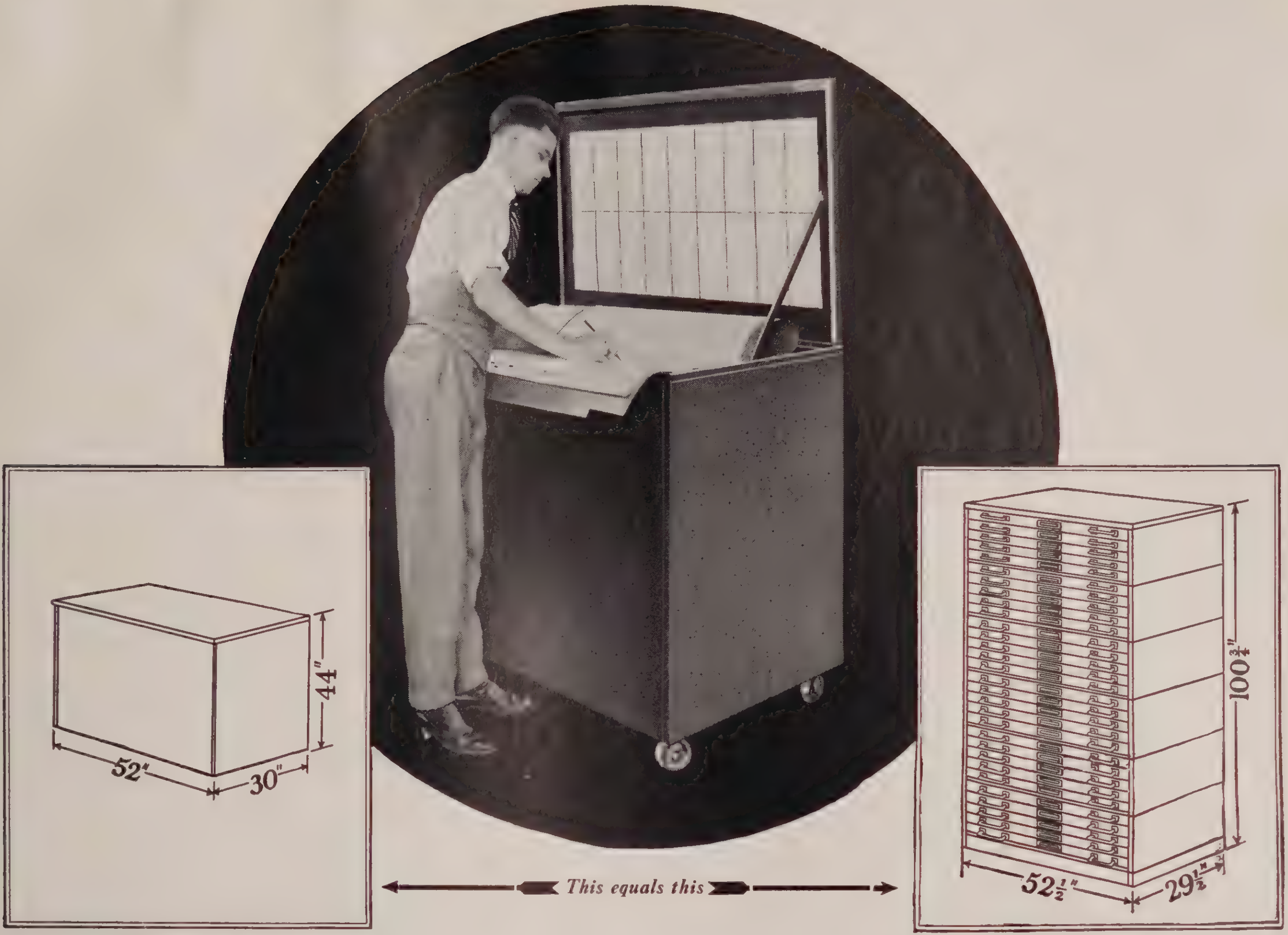

Art Metal Steel Planfile

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Uses least space—gives most protection

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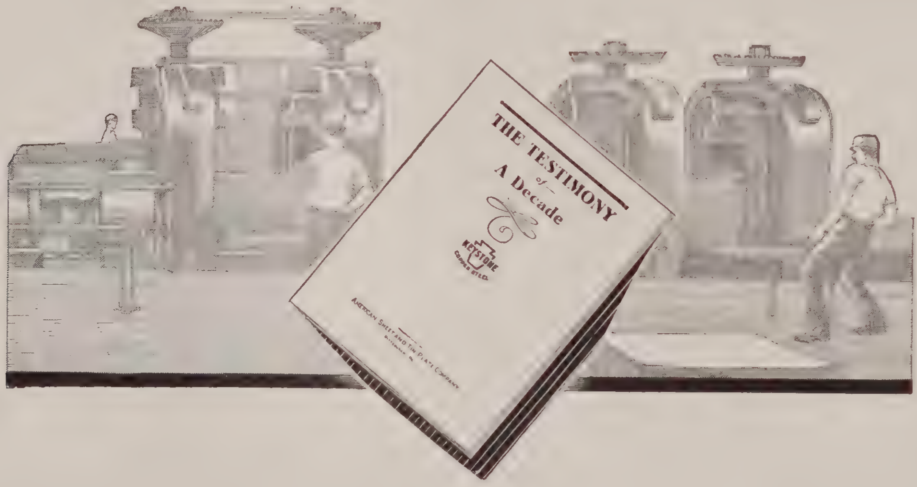

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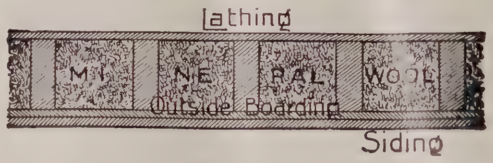

Section of Outside Wall of House, Showing Wood Between Studding

Mineral Wool for Building

Mineral Wool has superseded all other materials used for similar building purposes because it does "a great work at little expense." A house lined with Mineral Wool has an indestructible, fire-proof and vermin-proof guard; it protects the entire household. In the winter time it keeps the cold air out, facilitating proper heating and economy in fuel. In the summer it keeps the heat out.

This material, being of fibrous, inelastic composition, acts as a deadener and muffles all sound. It is considered the best insulator material on the market, making it a perfect refrigerating machine.

Mineral Wool makes life-long friends of all its users. If you are skeptical as to its power, let us demonstrate. We can prove all claims. Write us today.

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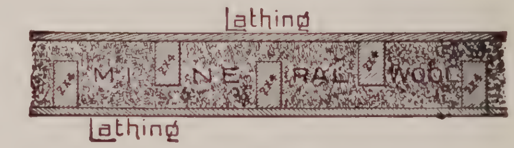

Section of Sound-Proof and Fire-Proof Partition

An EVANS VANISHING DOOR Product

FOR SCHOOLS

That Pays for Itself With

FLOOR SPACE SAVED

WARDROBES, Class E

have Laminated Backs, Ends and Divisions, and with Evans Process Hollow Sanitary Door, hung on double pivoted arms, without guides, tracks or rollers, swing easily and silently. They cannot stick or bind. Made with or without Blackboards. Hardware can also be purchased separately.

More than a Million hang their wraps in Evans Vanishing Door Wardrobes

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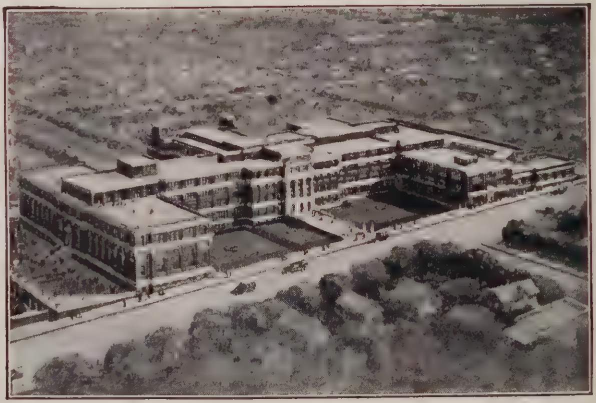
"Giant Metal," "Red Metal" and Steel

SASH CHAINS



Omaha Technical High School, Omaha, Neb.
F. W. and E. B. Clarke, Omaha, Neb., Architects

24,000 Feet No. 0 "Giant Metal" Sash Chain
Furnished for This Building

CATALOG AND CHAIN BOOKLET ON REQUEST
See page 1191, Sweet's Catalog

The Smith & Egge Mfg. Co.
BRIDGEPORT, CONN.
ORIGINATORS OF SASH CHAINS

Home of P. B. Hunt, Dayton, Ohio

Architect, Howard Williams, Dayton, Ohio

Hastings Rolup Screens Remain All Year in the Window

"*I wish to state that these screens are giving perfect satisfaction, and we are pleased with them in every way.*"* This is the report we have received regarding the installation of HASTINGS ROLUP Screens in the home shown above.

With HASTINGS ROLUP Screens the yearly installation and removal annoyance is eliminated. A mere movement like the raising or lowering of a window shade is substituted.

A specially designed roller fits into a small metal box at the head into which the screen rolls. Inconspicuous guide rails come down on the window stops. The box and guide rails are finished to match the trim, making a HASTINGS ROLUP Screen practically invisible. In taking the photograph of this interior it was necessary to raise two of the screens in order to indicate clearly that they are a part of each window unit.

They cover the entire opening, will not buckle, bulge or fly up, and *will not pull out at the sides*, for special Hastings locking devices hold them in the guide rails. Flexible metal ribbons form a protecting selvage for the screen cloth and bear all the strain when screen is rolled up and down. The screen cloth is made of Monel Metal, which is rust proof and is so flexible *it will not harden and crack from continuous rolling.*

HASTINGS ROLUP Screens offer a solution to the problem of satisfactorily screening casement windows and are preferable for double-hung and other types of window. They can be installed in new or old construction — for Residences, Hospitals, Hotels, and wherever screens are needed.

**Write for detailed drawings,
list of installations, etc.**

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ROLUP SCREEN COMPANY—410 E. 32nd St., New York

Representatives in all principal cities

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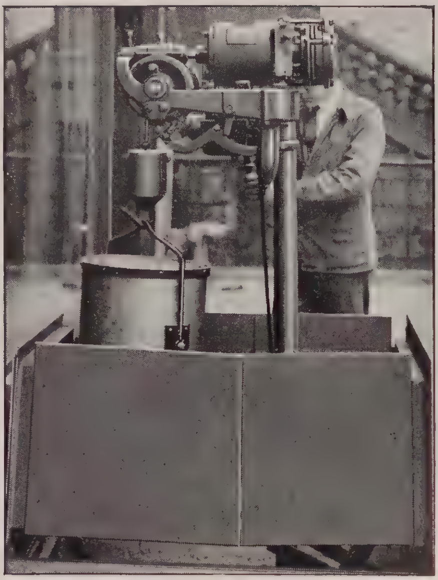
*Copy of this letter will be mailed to you on request



Why a *double* set of Spring Guard Gates?

IT sometimes happens that the sidewalk opening is so arranged that the doors open *toward* the building and curb. This leaves *two* sides to be protected instead of the building wall acting as a protection for one of the sides.

With G&G ash removal equipment, sidewalk openings like this can be completely and properly safeguarded by using a *double* set of G&G Spring Guard Gates. The illustration shows just how this is done.

This same arrangement can be used to advantage when the sidewalk opening is located away from the building, say near the curb.

Safety first! But with G&G ash removal equipment there is no sacrifice of operating efficiency to insure this extra degree of safety.

For Scale Drawings and Specifications see Sweet's, pages 2007-2015, or G&G October, 1921, Catalog

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The G&G ELECTRIC
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Telescopic Hoist
With Automatic Stop and Gravity Lowering Device

Proper
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demands—

Complete sterilization of water in the entire pool, as well as at point of application.

Reliability and constant operation.

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A method which kills all disease-bearing bacteria regardless of the nature of the water.

A method which sterilizes swimming pool water to the U. S. Government standard for drinking water.

A method without complicated mechanism or working parts.

The W & T process of Chlorination meets all these requirements—it is used by over 200 swimming pools—and by over 4000 cities and towns to sterilize the entire water supply.

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Makes every minute count

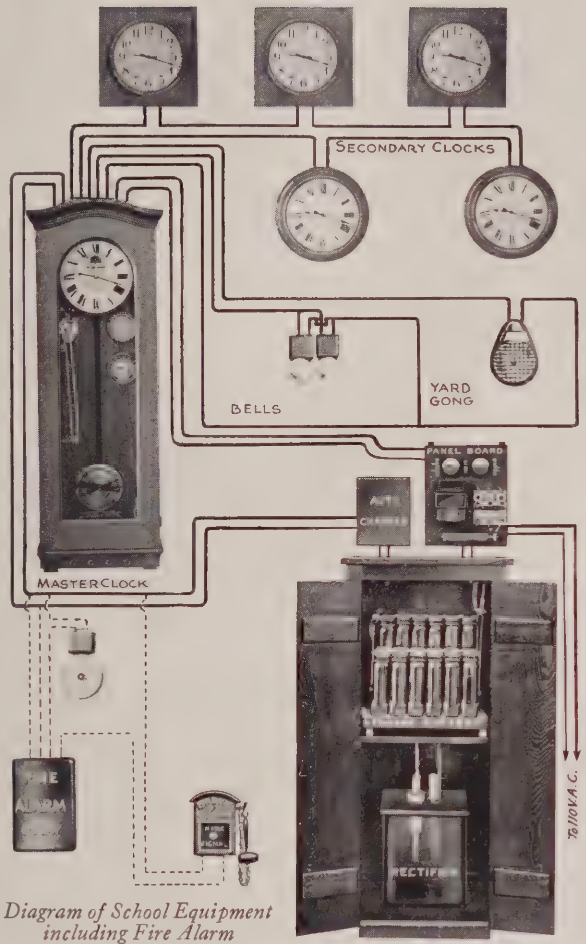

Diagram of School Equipment including Fire Alarm

TO MAKE YOUR SCHOOL PLANS COMPLETE

TO make your school or college plans efficiently modern, the "Standard" Electric System should be included. Sixty per cent of all schools having electric systems are Standard equipped. The system consists of Master Clocks, Secondary Clocks, Program Clocks and Signals, together with a Complete Battery Equipment.

The Master Clock operates and synchronizes any number of Secondary Clocks, Program Clocks, Time Recorders, Stamps or other Time-Keeping Apparatus.

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—that gives pupils and teachers the benefit of "time that never forgets," increases the teacher's efficiency and encourages methodical work by making punctuality certain. We are 38 years young and are the only concern that manufactures electric time systems exclusively.

Send for list of installations in your vicinity

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Gentlemen: Please prepare and submit to me without charge complete specifications, wiring diagram and estimate covering installations of electric time systems according to the rough floor plans showing approximate dimensions and data herewith attached. It is understood that this service is rendered gratis whether Standard equipment is eventually purchased or not.

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In the hospital where these famous surgeons carry on their wonderful work every particle of equipment is as near perfection as possible. That is why Holtzer-Cabot systems were specified and installed.

Holtzer-Cabot electrical signal systems have proved their unexcelled worth in the leading hospitals, schools, industrial and public buildings throughout the length and breadth of this continent.

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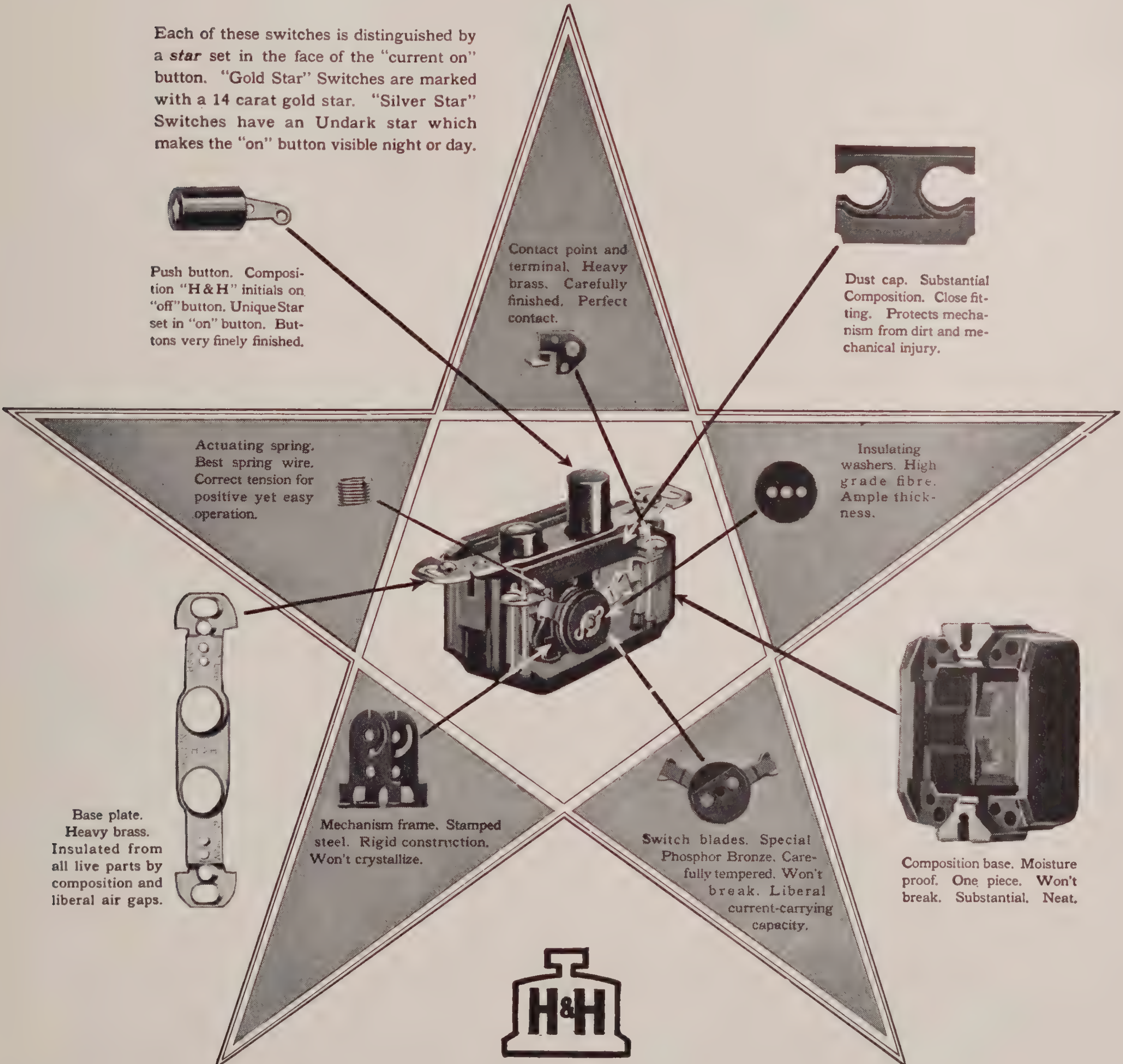
Each of these switches is distinguished by a ***star*** set in the face of the "current on" button. "Gold Star" Switches are marked with a 14 carat gold star. "Silver Star" Switches have an Undark star which makes the "on" button visible night or day.



Push button. Composition "H & H" initials on "off" button. Unique Star set in "on" button. Buttons very finely finished.

Contact point and terminal. Heavy brass. Carefully finished. Perfect contact.

Dust cap. Substantial Composition. Close fitting. Protects mechanism from dirt and mechanical injury.

Actuating spring. Best spring wire. Correct tension for positive yet easy operation.

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H&H

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National Electrical Code Standard

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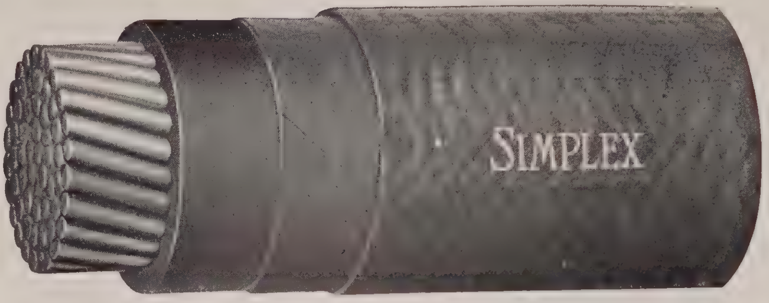

Complete detail specifications for your files upon request.
Ask for Simcore Specifications No. 2053.

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A Packing Lock Stem, with Ground Shoulder seating in bonnet, insures a Tight Valve that Stays Tight.
Send for Catalogue showing why

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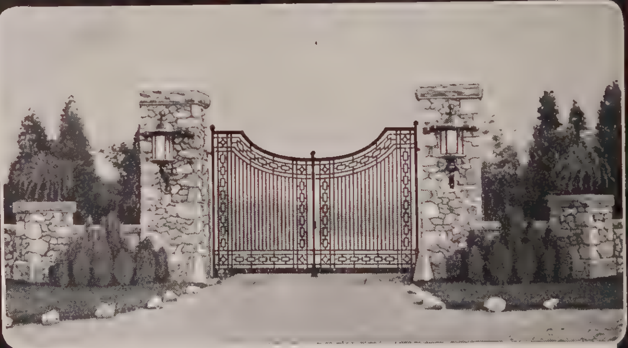

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We also manufacture grilles, balconies, partition railings, folding gates and miscellaneous iron and wire work.

Architects' Designs carefully executed in strict accordance with their specifications

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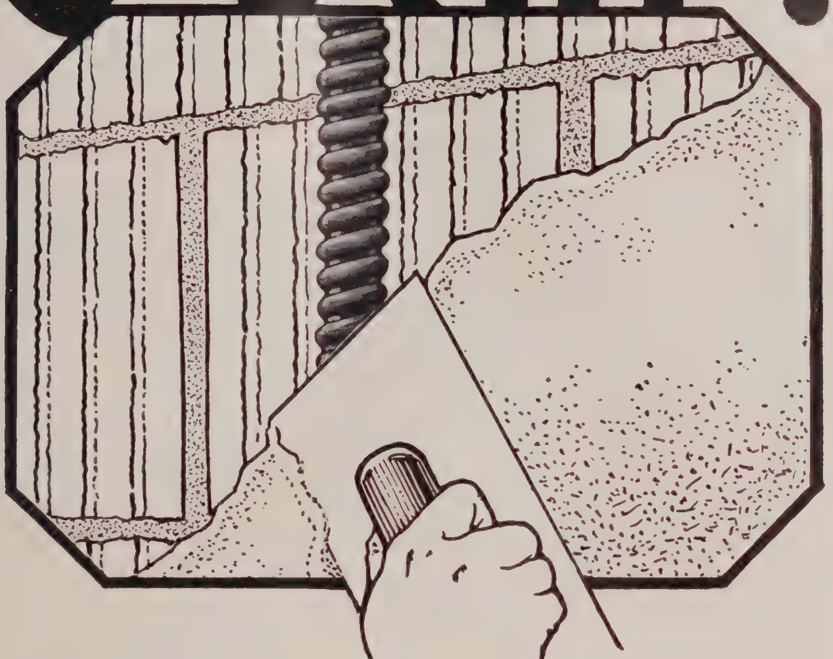

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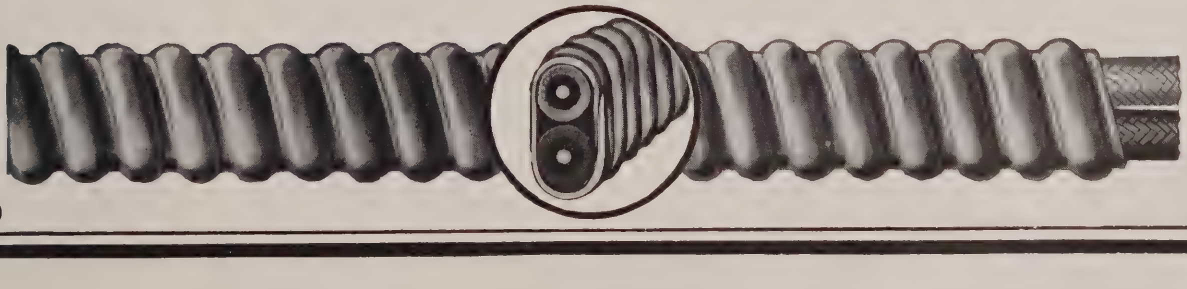

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TO the uninitiated a switchboard has always been a thing of danger and mystery. No one would think of groping for a switch in the dark.

Sprague Safety Type Panel Boards are constructed so that no current-carrying parts are exposed; a main switch tells at a glance whether the current is ON or OFF. These features, coupled with the refined appearance of the panel and cabinet, account for the widespread popularity they have attained among those who are particular in their choice of equipment.

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Sprague Safety Type Panel Boards have been chosen for many of New York's leading residences and commercial buildings.

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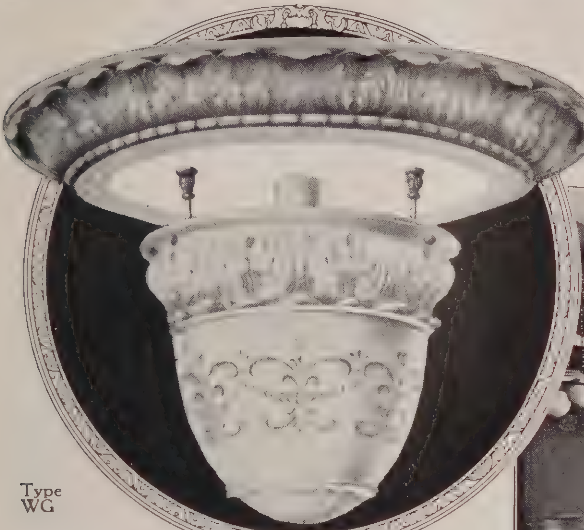
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Interesting view of Electric Equipment Co.'s Showroom looking towards Hanan Road, Shanghai, China, showing modern arrangement

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Great Northern Telegraph Company Building, Shanghai, China, Brascolited throughout

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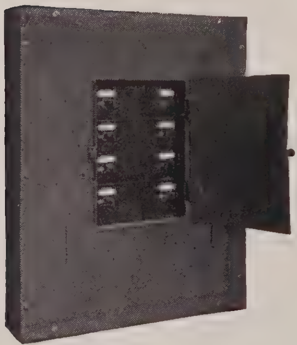

Type T Safety Panel Board—Dead-Front; Thirty Ampere; Heavy-Duty, Tumbler Switches in Branches.

"Sixty-five different businesses enter into my daily work," said an architect recently. "I cannot specialize in more than one—ARCHITECTURE."

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A building equipped with d'Humy Motoramps accommodates the maximum number of cars, gives the lowest building cost per car, and produces the highest return on the investment

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WHEN the architects wrote the specifications for the American Chicle Company Building, the name PEELLE was specified for Freight Elevator Doors. Why? Because they believed PEELLE Doors represented the highest advance in freight elevator door construction.

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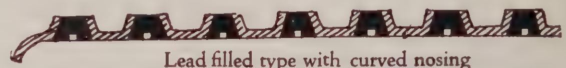
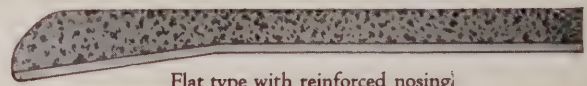
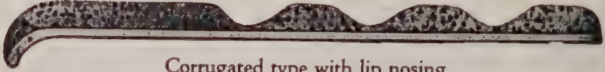


Lead filled type with curved nosing



Flat type with reinforced nosing



Corrugated type with lip nosing

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SAFETY TREADS

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Over sleepers embedded in the slab—A Bloxonend installation in the C., R. I. & P. Freight House, Little Rock, Ark.

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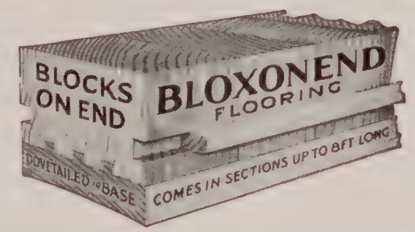
Over wood subfloor—Laying 23,000 sq. ft. of Bloxonend in the plant of the Silk Finishing Co. of America, New York City.

Over concrete without embedding sleepers—Installing 17,000 sq. ft. of Bloxonend by our lateral nailing method in the Ferro Machine & Foundry Co., Cleveland.



While not a parquetry flooring in any sense, because of its bright, clean and attractive appearance, Bloxonend is particularly adapted to the flooring of vocational departments, gymnasiums and similar locations.

With the end grain of the selected Southern pine blocks presented to wear, Bloxonend flooring is practically everlasting, and because of its composite form and the joining of each perfectly "milled" section with splines and nails as laid, it forms a surface that remains smooth always. Bloxonend is being specified extensively by architects in every part of the country and has been adopted by hundreds of the leading industrial plants as standard heavy service flooring.

Write nearest office for Architectural Specifications and a copy of Booklet "B"

Carter Bloxonend Flooring Company

R. A. Long Building, Kansas City, Mo.

Chicago: 332 South Michigan Ave.
Cleveland: 1900 Euclid Ave.

New York: 501 Fifth Ave.
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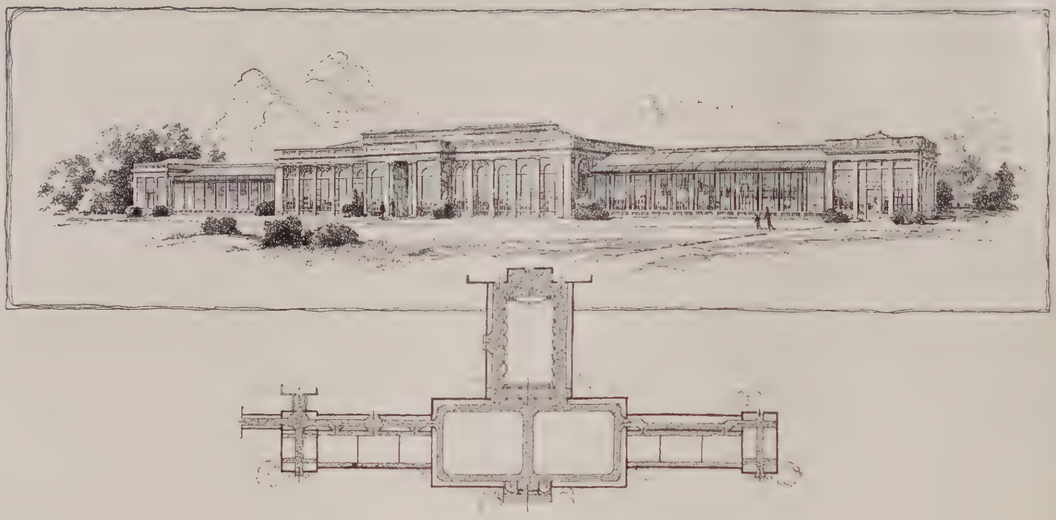
BLOXONEND

Lays Smooth—Stays Smooth



CAPACITY

In Relation to Large Glass Enclosures

THE large things after all are but a multiplying of the small ones. If, therefore, a concern does well the small things, the larger ones become only a case of capacity.

But capacity means so much more than mere facilities. It means vision, with the ability to grasp and execute proportionately.

A score of years ago we built the Bronx Park Botanical Conservatories which in size are not exceeded even by those in Kew Gardens, England. Ten years afterwards we were the contractors on that huge grouping of glass houses at the St. Louis Botanical Gardens, which in their classic treatment have prompted so much admiration. Somewhat recently we completed the glass roof on The Dupont Temple to Horticulture at Longwood, Kenneth Square, Pennsylvania, which is shown above.

Such are a few of the proofs that this firm has capacity.

Hitchings and Company

Greenhouse and Conservatory Builders

New York
101 Park Avenue

Rochester
Commerce Building

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Empire Building

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294 Washington Street

Long-Bell Lumber Saves Home Construction Costs

LONG-BELL trade-marked lumber is put into construction with a minimum of labor—planing, sawing and sorting; with a minimum of waste in time and materials—and time and lumber in any job represent *money*.

LONG-BELL lumber is surfaced four sides.

It has unusual care in trimming.

It comes full length—uniform in width and thickness in all surfaced stock.

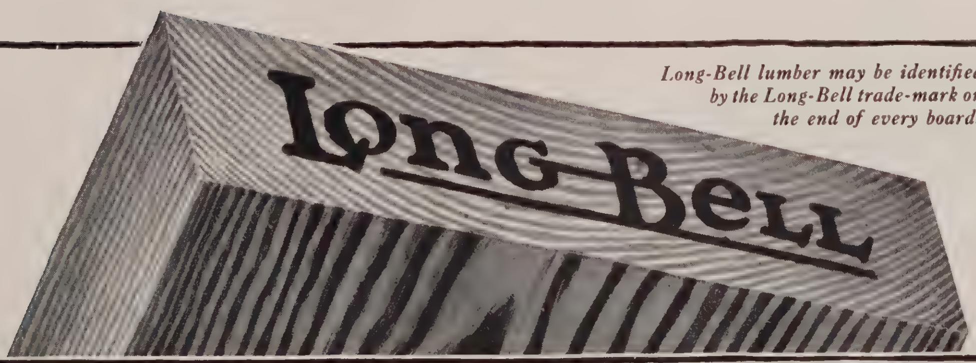
It shows uniform seasoning in both kiln and air-dried stock.

It is uniform in quality through the pile.

Lower grades have had the same care as upper grades.

Tongued and grooved stocks fit snugly.

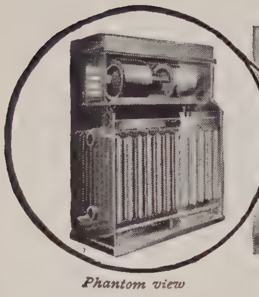
The Long-Bell Lumber Company
R. A. LONG BUILDING Lumbermen since 1875 KANSAS CITY, MO.



Long-Bell lumber may be identified by the Long-Bell trade-mark on the end of every board.

UNIVENT

"LIVE OUTDOORS-INDOORS"
(TRADE MARK)



Phantom view

Classroom showing Univent installation

Fresh Heated Air from the Window

Your ideal of perfect ventilation is all the fresh air you want, when you want it, where you want it.

Your ideal is realized perfectly in the Univent—because in principle it is as simple and more positive than opening a window—but without the cold and dangerous draft.

The Univent system is designed on a unit basis. Each separate room is heated and ventilated by its own individual Univent.

There are no uncleanable ducts or flues. Each Univent draws fresh air directly from outdoors, heats it and thoroughly diffuses it throughout the room. Wind or weather makes no difference in the operation of the noiseless Univent system. It is positive.

Tests have proven that good ventilation in schools increases mental alertness of pupils and teachers 33⅓% and decreases sick leave 50%.

Univent installation cuts down building costs and saves space because no ducts are necessary. For the same reason Univent air is purer than air traveling through long, dust-laden ducts. The Univent is designed for schools and all buildings where mechanical ventilation is necessary.

Having determined upon a Univent System the Architect can prepare his preliminary sketches without further thought to heating and ventilating, knowing that he will not have to tear down his building to install it, or be handicapped in meeting his estimate cost by addition of space or expensive construction.

Send for a copy of our 72-page Architects' and Engineers' edition "Univent Ventilation" or, better still if you have a ventilation problem, send us sketches or blue prints and let us make specific recommendations and estimate of cost. No obligations.

THE HERMAN NELSON CORPORATION
Dept. B, *Moline*, Illinois

ROOSEVELT SCHOOL, UNION HILL, N. J.
HAS COMPLETE UNIVENT INSTALLATION
Joseph Lugosch, Architect, Union Hill, N. J.

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WINDERMERE
Chicago

Rapp & Rapp, Architects
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Equipped with

HESS SNOW-WHITE STEEL
MEDICINE CABINETS

Hess Warming & Ventilating Co.
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Sweet's Catalogue, page 1638

For steam or vapor systems

Sectional View

For Every Type Heating Plant

For hot air or hot water systems

Side View
Fire Pot Generator

Specify the Excelso Water Heater
Supplies HOT WATER without Gas Bills During Heating Season

The Excelso Water Heater for steam or vapor heating systems—Generator for hot water and hot air heating systems—will furnish abundant hot water without gas, electricity or separate fire.

Guaranteed absolutely on a money back basis.

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EXCELSO WATER HEATERS
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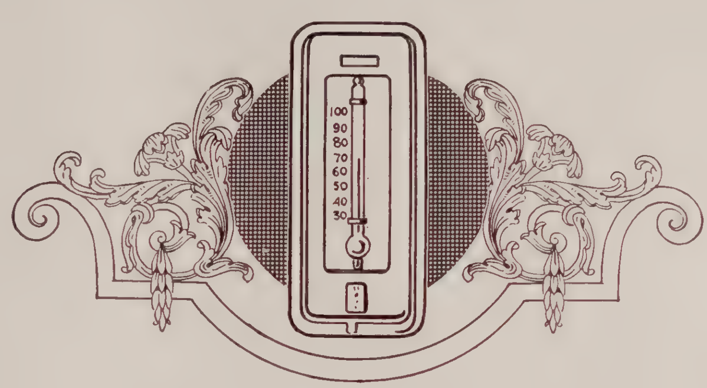

The Architect and this Company

THIS company does not attempt merely to induce the architect. It intends only to inform him. And when we say such things as that the valves used in The Johnson Pneumatic System of Temperature Regulation are guaranteed for ten years, perfect performance is presented as a fact, not a promise. There are numerous similar Johnson certainties which are making automatic temperature regulation utterly successful now: in institutions, public buildings and large residences. No building today is complete unless The Johnson Pneumatic System of Temperature Regulation is included. This company has brought automatic temperature regulation to that point of deserving universal installation. And, understand, these statements are made to inform, not merely to induce; moreso urging every architect's consideration. . . . .

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H. P. Knowles, Architect

THE sanitary cleaning system which permits cleaning without scattering dust and dirt in the air is of vital importance for hospitals.

The Spencer system offers advantages that cannot be found in any other method of cleaning.

Your request will bring booklet and complete information without obligation on your part.

The Spencer Turbine Company
Hartford, Connecticut

Manchester Memorial Hospital, Manchester, Conn.
Smith & Bassette, Architects

Showing installation of swinging type of Varnum Engines — cover plate removed.

VARNUM Door Engines are now used by all but one of the Los Angeles Banks. They are used for the opening, closing and locking of grille doors and gates of safety deposit vaults. They operate silently and surely upon the momentary depression of an electric button. They add considerably to banking service and assure greater safety.

Varnum Door Engines are also in use on the Gateways of Country Estates and the Garage Doors of City Homes. Their utility is inestimable. Send for the Varnum Catalogue and blue prints.

VARNUM DOOR ENGINE CO.
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Architectural Details *from* Westminster Abbey *and* St. Margaret's Church

By ALBERT EDWARD BULLOCK, A.R.I.B.A.

A PORTFOLIO of 82 phototypes of architectural details and of renaissance and later renaissance monuments, cartouches, and cenotaphs, many of which, particularly those of the Georgian period, possess a high value as suggestions for present-day war memorials.

12¼ x 15¾ *ins.*

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First Presbyterian Church
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H. L. Larzelere
Architect

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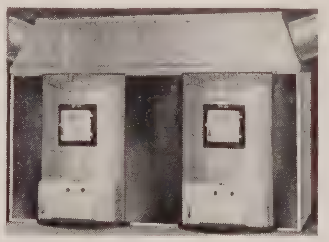
For Churches and Public Buildings

THE church above illustrated is heated by a battery of four No. 30 Kelsey Warm Air Generators, with square metal housing, Multivane fan, electric motor and air filter. The air in the building is completely changed every ten minutes. Another church in the same city, the First Methodist, has just ordered a similar installation of Kelsey Warm Air Generators, based on the eminently satisfactory records of the heating and ventilating systems at the First Presbyterian Church.

The Kelsey System provides ideal heating equipment for churches and public buildings. The Generators are arranged in batteries, with a common warm air chamber, so that only as many units may be operated as weather conditions necessitate. The warm air, constantly changing, is kept fresh and pure, while the automatic humidifier supplies the moisture necessary for health and comfort.



The mechanical fan or blower system may be operated in summer as a cooling and ventilating system, keeping the air in constant circulation.

Our Engineering Department offers the architect the fullest cooperation, furnishing detailed plans and specifications, which will insure satisfactory installation.

Send for "Kelsey Systems of Heating and Ventilation, Gravity and Mechanical," and any other information you desire

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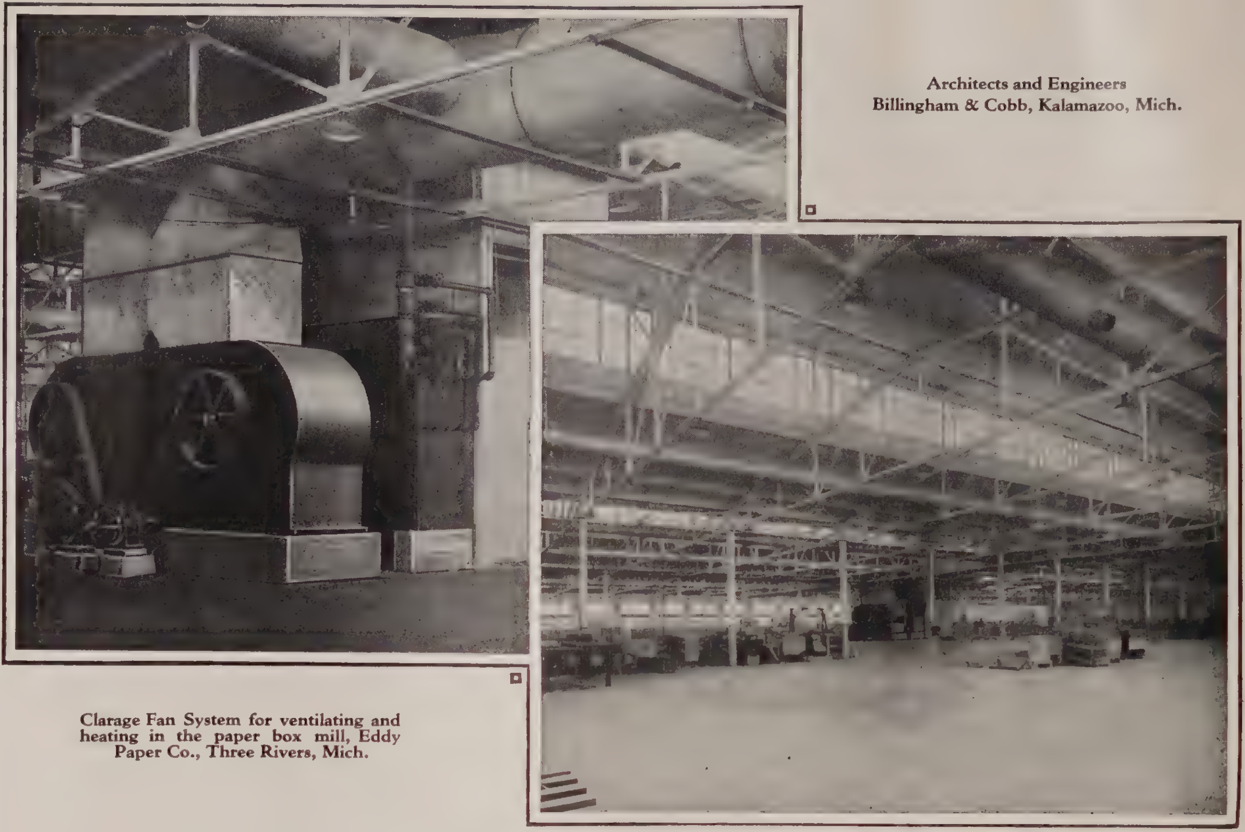


Architects and Engineers
Billingham & Cobb, Kalamazoo, Mich.

Clarage Fan System for ventilating and heating in the paper box mill, Eddy Paper Co., Three Rivers, Mich.

Better fans—better men

WHAT steam is to an engine, air is to a man.

A steam engine with half enough steam —impossible!

A man with half enough air—common!

Without considering the humanitarian side, viewed merely from a standpoint of dollars and cents, a high priced man deprived of good air and good ventilation is, like an under supplied engine, a bad investment.

Adequate ventilation is simply a matter of choosing the correct type of the right equipment. Consistently excellent service records in hundreds of America's architectural landmarks have shown that there is no more dependable fan or ventilating equipment than that bearing the established name, Clarage.

Clarage engineers, backed by unsurpassed experience in ventilating problems, are constantly cooperating with architects and engineers. They are helping architects to specify equipment that will make the finished job a credit to their ability.

Ask for complete information about Clarage Fans, Ventilating Equipment and Humidifying Systems. Or interview a representative of the Clarage engineering staff and become acquainted with the valuable service offered by this organization.

Clarage Fan Co., Kalamazoo, Mich. Branches in Principal Cities

CLARAGE
-KALAMAZOO **Multiblade Fans**

Would you O. K. a steam job without a regulator?

THERE isn't an architect anywhere who would accept a steam boiler without the economy and efficiency of damper control.

And yet some architects are putting their O. K. on hot-water boilers without damper control.

The Arco Water Regulator is as necessary to the hot-water boiler as the steam regulator is to the steam boiler.

With it, the water in the system may be kept at any desired temperature between 100 and 220 degrees. When the temperature of the water decreases, the drafts automatically open. The temperature rises until it reaches the desired point when the drafts close.

There is nothing you can add to a hot-water heating system that will do so much toward making it operate as it should and the daily saving of coal soon pays for its cost.

When you make Arco Water Regulator part of your specifications, ("boiler to be equipped with #800 Arco Water Regulator"), you are going a long way towards insuring real comfort for your clients.

Arco Junior Water Regulator keeps the temperature in the hot-water supply boiler at any point desired between 120° and 180°. It can be easily installed in any hot-water supply boiler—old or new—and it not only saves coal, but keeps the fire from burning out.

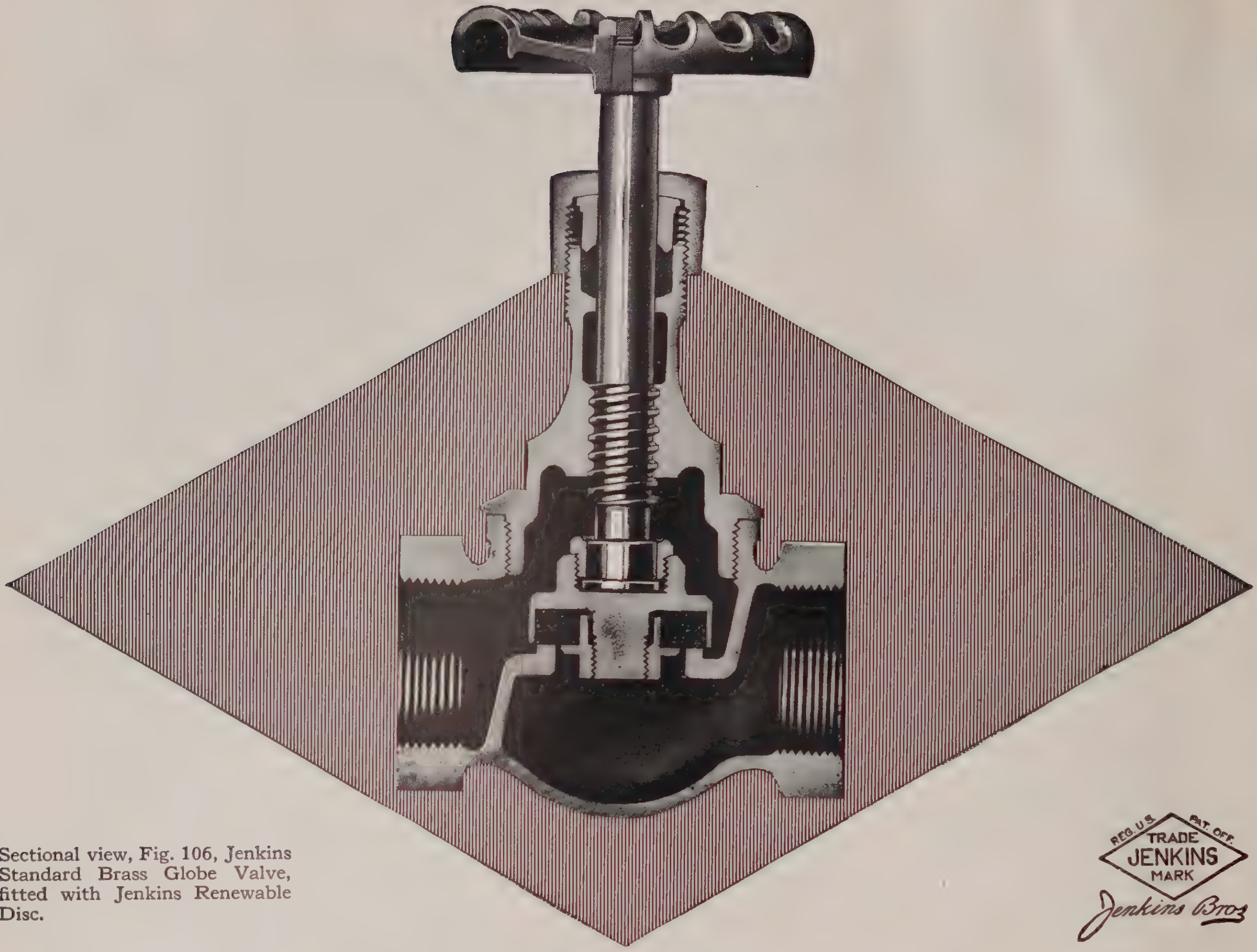
You can get Arco Water Regulator from your jobber or from our nearest branch

Arco Water Regulator

AMERICAN RADIATOR COMPANY

Ideal Boilers and American Radiators for every heating need

1807 Elmwood Avenue Dept. W-117 Buffalo, N. Y.



Sectional view, Fig. 106, Jenkins Standard Brass Globe Valve, fitted with Jenkins Renewable Disc.

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TRADE
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They afford the PERMANENCE you desire

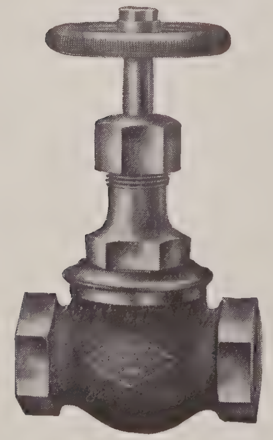

Fig. 310. This is a brass globe valve with a brass wheel and can be supplied in polished and nickel-plated finish.

Jenkins Valves have strength—ample strength to stand the strains of expansion and contraction and lifting and settling of the piping. In every respect, Jenkins Valves are designed, made, tested, and guaranteed for the severest service to which they may be subjected.

They are valves that can be opened easily and closed tight—valves that do not leak. Briefly, they are valves of permanence, that go into service and stay—and for these reasons they prove the most economical.

The sectional view shown above, of a Jenkins Standard Brass Globe Valve, will give you a good idea of the thorough and uniform distribution of metal. There is no weakness at any point. Note the powerful and accurately threaded spindle; the follower that compresses the bonnet packing; the perfect contact which the Jenkins disc makes on the seat; the ventilated non-heat malleable iron hand wheel, and the true threading at openings.

Jenkins Valves are made for all requirements. And they afford the permanence you desire. Specify the genuine with the Jenkins Diamond and signature.

JENKINS BROS.
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Factories: Bridgeport, Conn.;
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Jenkins Valves

SINCE 1864

Drop All Waste Here-Then Forget It

A Successful Means of Lowering Apartment Building Overhead

IN many of the finer apartment buildings erected during the past ten years the cost of disposing of garbage and waste is surprisingly low. This saving in operating expense is due to the foresight of architects and builders who, in planning these apartments, included the Kernerator—the modern system for the disposal of household refuse.

The Kernerator consists of a brick incinerator built into the base of the chimney when the building is erected, and hopper doors located in the flue on the floors above. It takes care of all household refuse—rags, sweepings, wilted flowers, broken crockery, tin cans, garbage—***without cost,*** for no commercial fuel is required.

In apartments that are Kernerator equipped there is no expense for the removal of garbage and waste except for the time required to clean out ashes and tin cans every five or six weeks. There are no garbage cans and waste receptacles to be repaired or replaced each year. The janitor does not have to collect refuse every day, thus saving a large part of the janitor's time. And in addition to the economy factor, the Kernerator eliminates fouled dumb waiters or rear hall or back porch garbage cans and affords tenants added comfort and convenience.

The Kernerator should be specified in the plans before construction begins
For complete information, see page 2124, Sweet's 1922 Catalog

Kerner Incinerator Company

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KERNERATOR

Built-in-the-Chimney

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FISH BRICK

Pierce Arrow Service Building
Long Island City, N. Y.

Griffin & Wynkoop, *Architects* Burke Brothers Construction Co., *Contractors*

FISH BRICK was used for exterior walls of the Pierce Arrow Building at Long Island City. Our Factory No. 1 Full Range Rough Texture Gray and our Full Range Rough Texture Red were combined to produce wall surfaces of unusual beauty

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Incorporated
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This Magnificent Hotel now under construction at the corner of 56th and Cornell, Chicago, will be equipped with 500 Murphy Beds.

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Owners, Architects and Builders know them to be sturdy and dependable equipment; but the significant fact is that tenants, appreciating their remarkable convenience, *expect* them. Wire or write for full information!

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**There is only one "In-A-Dor" Bed—
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This department co-operates with architects and builders. This simplifies your lay-out problems and parallels your own purposes

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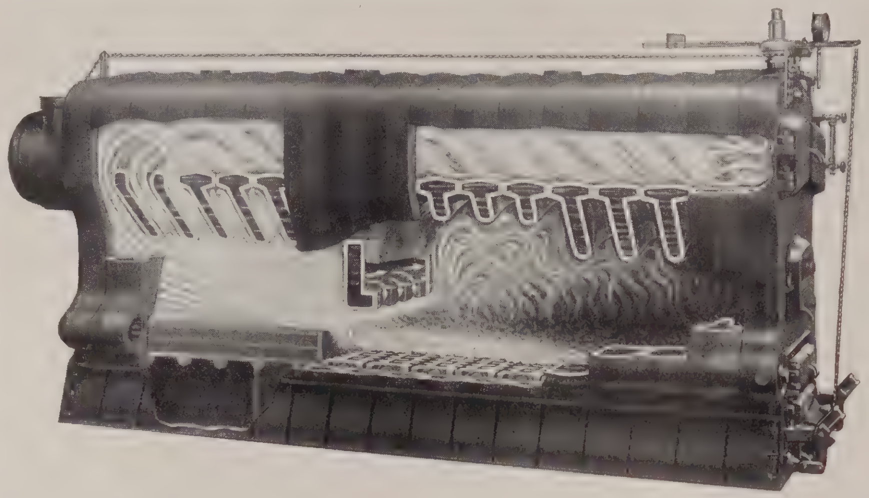

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FOR LARGE BUILDINGS

BURN SOFT COAL SMOKELESSLY

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SUPER-SMOKELESS Boilers attain remarkable heating efficiency and operate successfully with even the poorer grades of soft coal.

The Bunsen Burner Principle of mixing additional air (oxygen) with the combustible gases converts the heavy smoke into intensely hot, clean flames free from smoke and soot.

The economy and smokeless operation of SUPER-SMOKELESS Boilers have been demonstrated in thousands of installations and they are recommended wherever high fuel costs, rigid smoke ordinances and fine buildings must be considered.

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UPHOLSTERED furniture that combines super quality with luxurious comfort and artistic grace produced by makers of sixty-eight years' standing.

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Reds, Browns Tans and Buffs

Doric Stippled Brick:

THE Dorics offer six unusual shades of buffs and tans, running from a delicate buff with a slight pinkish cast, through olive buffs, golden tans and rich browns to deep purplish browns and black.

Gothic Stippled Brick:

THE Gothic stipples comprise five very desirable shades of rich browns and reds. They range from a dark brown or black, through lighter browns and reds to a wonderful old rose shade.

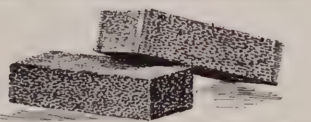
Finely illustrated booklets describing these two types of Stippled Brick will be sent on request. Address Dept. 11.

The Double Purpose of Stipple Texture

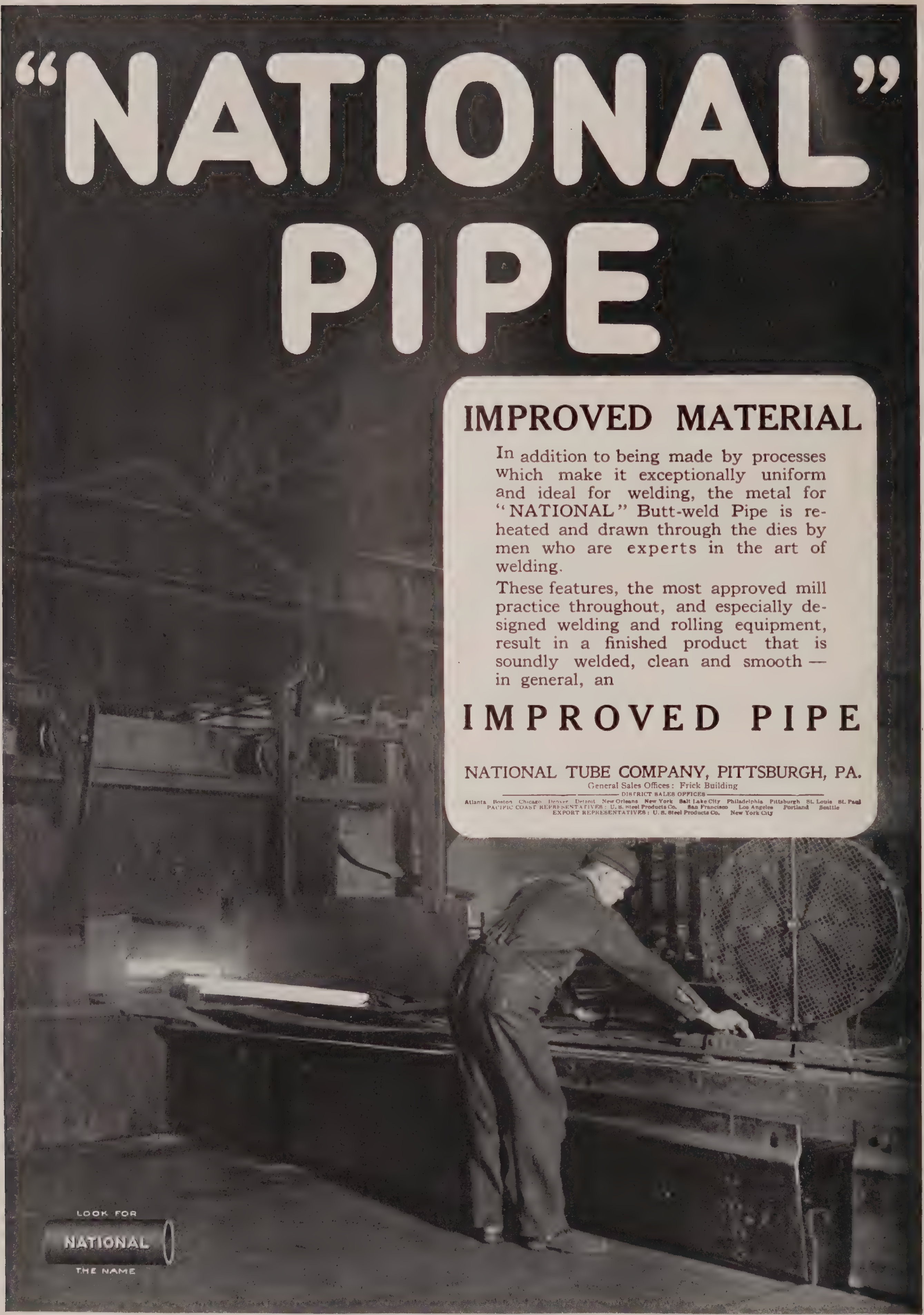
THE distinctive markings on the faces of Stippled Brick serve a double purpose. They give an original and inimitable character to the brick. And because of their shape, they act similarly to prism glass in softening and diffusing light, as is necessary to bring out the life and the true beauty of the brick colors.

The slight incisions produce an ideal texture; a surface not smooth enough to be monotonous, still not rough enough to be garish. Stippled Brick represent the happy medium, expressive of good taste and refinement.

STIPPLED BRICK



Western Brick Company
Capacity One Hundred Million Annually
Danville, Illinois



"NATIONAL" PIPE

IMPROVED MATERIAL

In addition to being made by processes which make it exceptionally uniform and ideal for welding, the metal for "NATIONAL" Butt-weld Pipe is reheated and drawn through the dies by men who are experts in the art of welding.

These features, the most approved mill practice throughout, and especially designed welding and rolling equipment, result in a finished product that is soundly welded, clean and smooth — in general, an

IMPROVED PIPE

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A story from Sherry's

TWENTY-FIVE years ago when Sherry's Hotel was built it was one of the show places of the great Metropolis. It had the best of everything in its construction. Bridgeport Brass Pipe was used throughout for hot and cold water service.

Changes in the times so affected the business of this world-famous restaurant, and the money value of the site on which it was located, that the building was sold to the Guaranty Trust Company, who remodeled it into its present form for banking purposes.

During the remodeling, the pipe along with other constructional elements was carefully scrutinized to determine whether or not it should be replaced. The Bridgeport Brass Pipe was found to be as good as new. The lengths that had been removed were reinstalled and the pipe built back into the remodeled structure.

After more than 20 years of service Bridgeport Brass Pipe was as good as the main structural elements of the building; it will last as long or longer.

This is a story worth remembering when building plans are under consideration.

BRIDGEPORT BRASS COMPANY, Bridgeport, Conn.

Bridgeport Plumrite *The Improved* **Brass Pipe**

REG. U. S. PAT. OFF.

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if you are at all interested in the subject of water service piping, we shall be glad to send you a copy of our book, "Brass Pipe and Piping." It deals with corrosion, its theory and prevention; discusses the advantages and disadvantages of the various pipe metals, and gives instructions for handling brass pipe, laying out installations and figuring costs. Copies are gratis on request—use this coupon.

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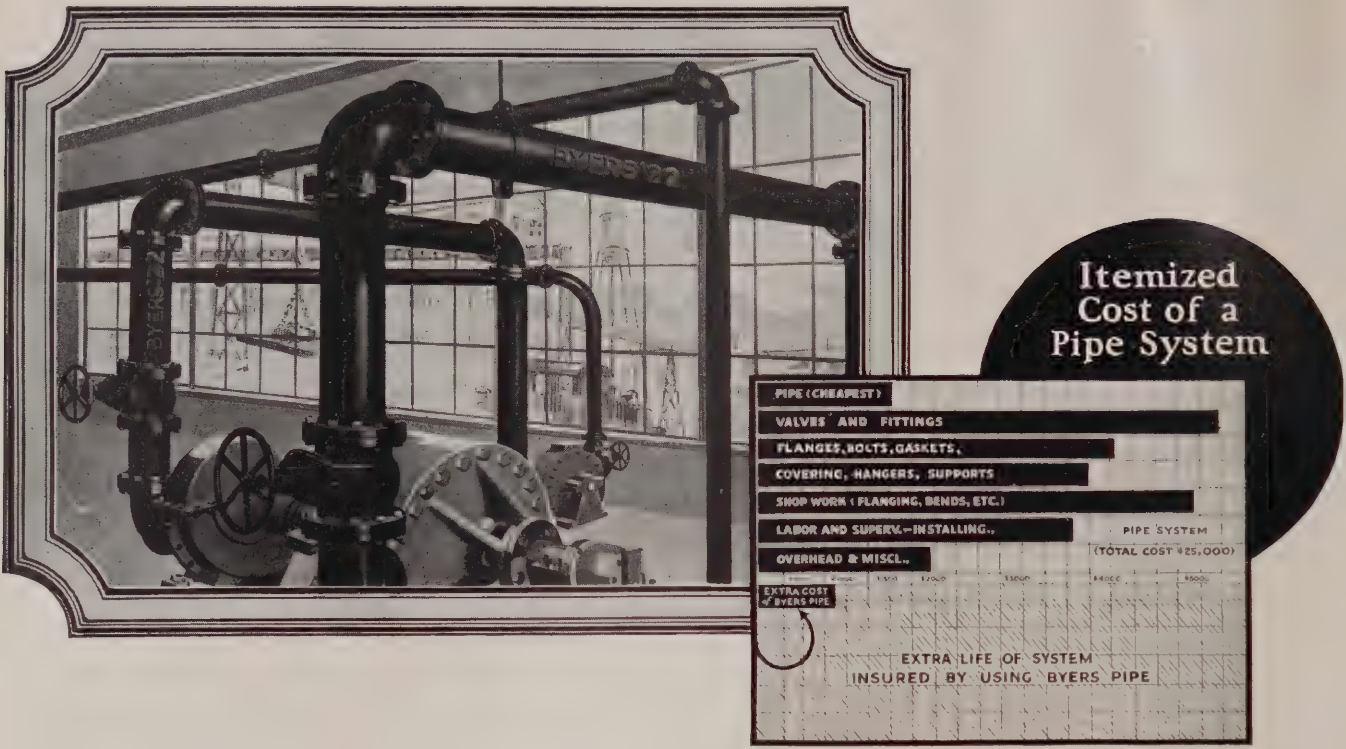

How Big Investment Values are destroyed by pipe corrosion

One of the largest items of cost in a building or power plant, is the piping. Certainly it is also an item of greatest influence on cost of maintenance. Its relation to the investment value is therefore evident.

If the pipe used is lacking in rust-resistance, record-breaking replacement costs must, sooner or later, be faced.

Where piping is buried in walls and floors, the damage done to these is often greater than the cost of repairs to the pipe system itself. But even where the pipe is exposed and readily accessible, the cost of repairs and renewals is usually *ten times greater than the initial cost of the pipe which caused the failure.*

Study the diagram! Note the usual items of cost in a pipe system, and the small extra cost of Byers pipe. Note also the fact that Byers pipe, being made from rust-resisting, genuine wrought iron, practically doubles the life of the system.

Byers Bulletin No. 38 contains Analyses of Items of Cost in a variety of pipe systems, with notes on replacement costs and corrosive conditions. Sent Free on request.

A. M. BYERS COMPANY, Pittsburgh, Pa.
Established 1864

New York	Boston	Philadelphia	Cleveland
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GENUINE WROUGHT IRON

Look for the Name and Year rolled in every length

EST. READING 1848

"'Reading' on every length"

Pipe for the World's Largest Greenhouse—*America's Finest Homes and Imposing Buildings*

IN the world's largest greenhouse—at North Wales, Pennsylvania—eighteen miles of Reading Genuine Wrought Iron Pipe distributes the heat which makes 80,000 rose plants bloom as well in January as in June. And throughout the metal framework which supports this enormous glass structure Reading Genuine Wrought Iron Pipe is used wherever the danger of corrosion is greatest and the bearing strain is most severe. Yet despite the great amount of moisture, this Reading Pipe—which was installed in 1909—shows practically no sign of corrosion.

When you plan the building or remodeling of a home, theater, hospital, hotel or office building specify Reading—the pipe that endures. Consider the inconvenience and expense of replastering, repapering or redecorating when concealed pipe corrodes. Think of the cost of the piping replacement itself, and remember that a siliceous slag content gives Reading Genuine Wrought Iron Pipe a life of service two to three times that of steel.

A copy of our model specification will be mailed upon request.

READING IRON COMPANY, Reading, Pa.

World's Largest Makers of Genuine Wrought Iron Pipe

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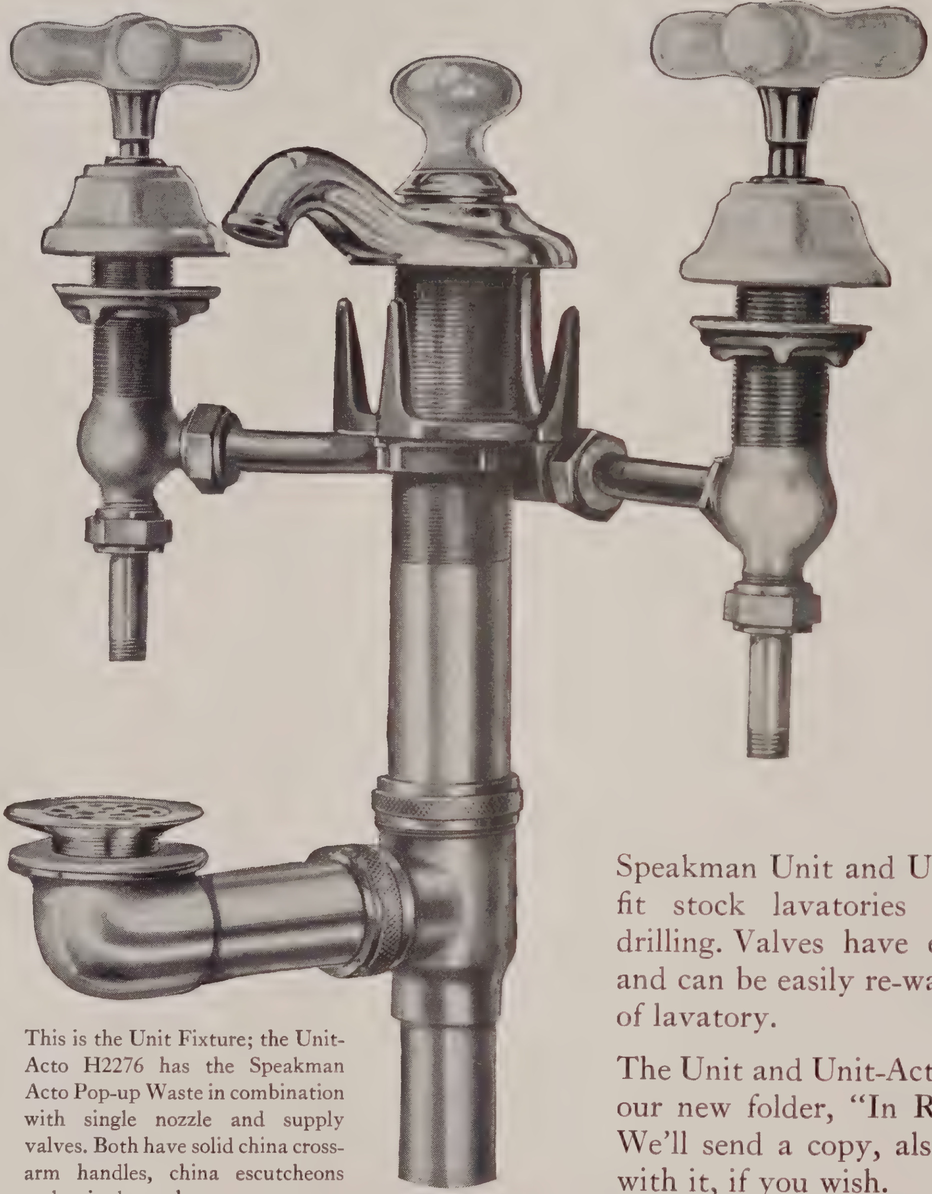
READING
GUARANTEED GENUINE
WROUGHT IRON PIPE

Not only on new lavatories but on those already installed



H2266

This is the Unit Fixture; the Unit-Acto H2276 has the Speakman Acto Pop-up Waste in combination with single nozzle and supply valves. Both have solid china cross-arm handles, china escutcheons and raised nozzle.

Speakman Unit and Unit-Acto fixtures fit stock lavatories without special drilling. Valves have encased washers and can be easily re-washered from top of lavatory.

The Unit and Unit-Acto are featured in our new folder, "In Running Water." We'll send a copy, also our catalog H with it, if you wish.

SPEAKMAN COMPANY
Wilmington Delaware

Unit and Unit-Acto LAVATORY FIXTURES

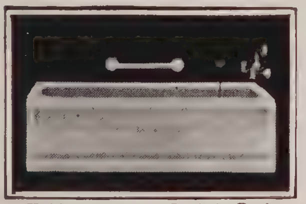
If This Catalog Had Only One Page—

If there were only one page in the new Kohler Catalog F and that page described and listed the Kohler "Viceroy" Built-in Bath in its various patterns and sizes, Catalog F would be an indispensable part of your working library.

The Kohler "Viceroy" first established the modern style in built-in baths. Now it sets the standard for all other tubs of the built-in type. It is really the world's most famous bathtub. Again and again it has been chosen for installation in the finest hotels, clubs, and homes in this country and abroad. There is no "or equal" for it.

Yet the "Viceroy" Bath is only one item in the complete, well-rounded Kohler line. Catalog F is an exposition of the finest in enameled plumbing ware—finest in quality, finest in design—for every class of installation.

The distribution of this important and valuable catalog is still incomplete. If you have not yet received your copy you will confer a favor by notifying us on your business stationery.



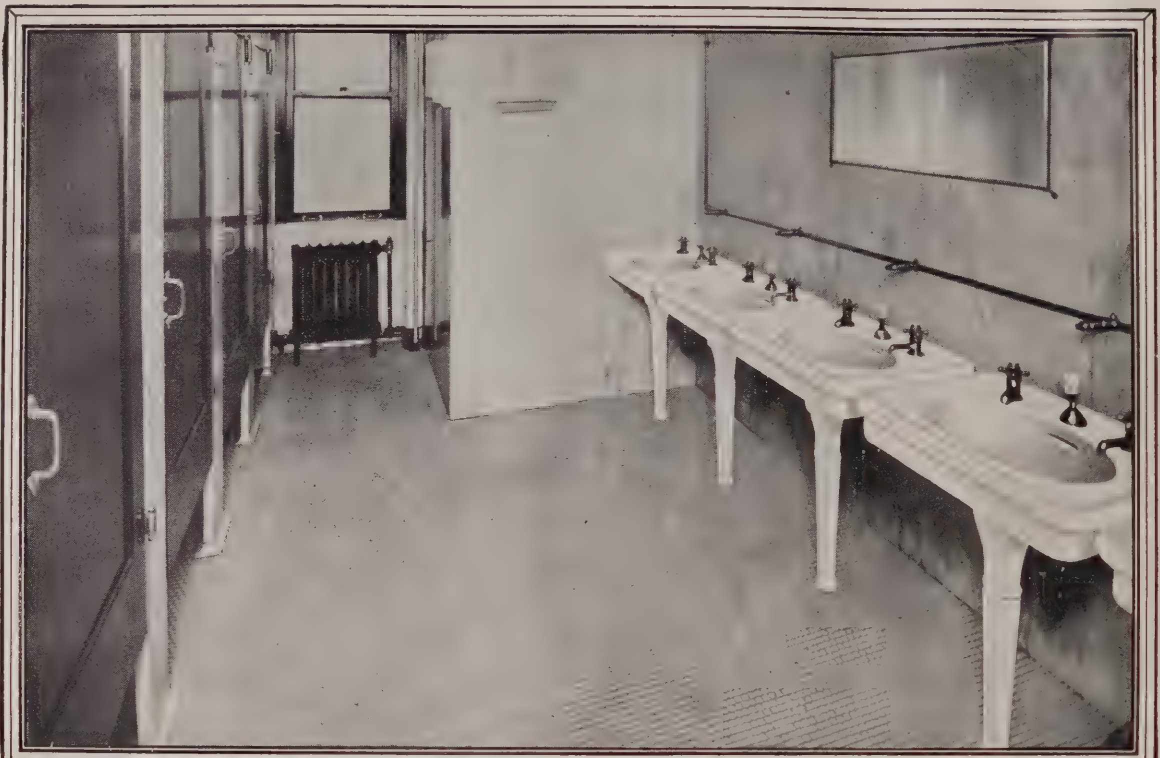
Kohler "Viceroy" Built-in Bath
Recess Pattern

Every piece of Kohler Enameled Plumbing Ware is exclusively distinguished for (1) the beautiful, snowy whiteness of its durable enamel (2) the uniformity of this whiteness in every fixture (3) the name "Kohler" in dainty blue letters inconspicuously but permanently fused into the enamel

KOHLER OF KOHLER

Kohler Co., *Founded 1873,* Kohler, Wisconsin · *Shipping Point,* Sheboygan, Wisconsin
BRANCHES IN PRINCIPAL CITIES

MANUFACTURERS OF ENAMELED PLUMBING WARE AND KOHLER AUTOMATIC POWER AND LIGHT 110 VOLT D. C.



A CRANE-EQUIPPED WASHROOM IN THE STANDARD OIL CO. BUILDING AT OMAHA. JOHN AND ALLEN McDONALD, OMAHA, ARCHITECTS

REFINEMENTS THAT APPEAL TO THE OWNER

The refinements in Crane sanitation fixtures appeal to any owner. A Crane lavatory, for instance, is equipped with a large drain fixture, very convenient in use. This fixture, known as the Securo direct-lift waste, is simple in construction, having only two moving parts. It has little exposed metal to keep clean. Crane fixtures are produced to match, in beauty and endurance, the high quality of the Crane valves and fittings supplied for the piping of heating and sanitation systems.

CRANE

GENERAL OFFICES: CRANE BUILDING, 836 S. MICHIGAN AVE., CHICAGO
Branches and Sales Offices in One Hundred and Thirty-five Cities
National Exhibit Rooms: Chicago, New York, Atlantic City
Works: Chicago and Bridgeport

CRANE, LIMITED, MONTREAL. CRANE-BENNETT, Ltd., LONDON
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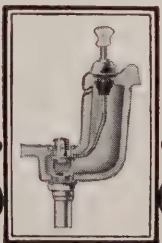


Crane "Securo" Waste Fixture

An Old Hand's Advice

An old plumber named Kerrigan once told me that he had advised his son, on taking over the business, always to use Clow Plumbing.

"It saves time on the job," he said. "And time is money."

Take the porcelain urinals, illustrated above. In the first place, after a rigid inspection for flaws, they are matched as to height and color.

They then go to the assembly floor, where, armed with the architect's blue prints, skilled workmen set them up.

The seam covers do not quite fit. But with an air chipping chisel, they are made to fit. When set up on the job there will be no unsightly gaps to be plastered up.

All the fittings and trimmings are assembled. The whole thing is then taken down and shipped, with all parts marked, to the plumber who is to install it.

The old man was right. Clow plumbing *does* save time on the job!

W. E. Clow, Jr

JAMES B. CLOW & SONS
General Offices: 534-546 S. Franklin Street, Chicago
Sales offices in the principal cities

THE BRUNSWICK-BALKE-COLLENDER CO.
WHALE-BONE-ITE
REG. PAT. OFFICE
CLOSET SEATS

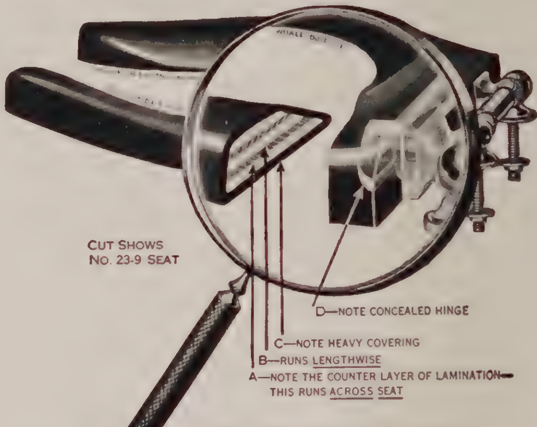
Eliminating maintenance expense is just as interesting to your client as fire-proofness.

NO RE-FINISHING EVER NECESSARY ON

Whale-Bone-Ite
Toilet Seats

See that *heavy* covering. No amount of cleansing or scrubbing will wear through it.

It's not what you pay—it's the value you get for the amount you spend.

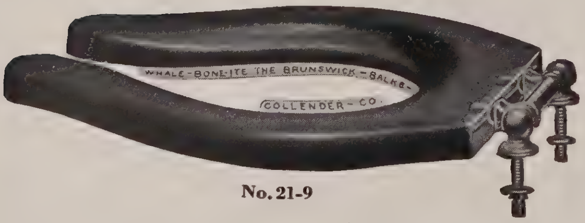


No. 23-9—For Regular Bowls.

Whale-Bone-Ite Provides life-long Sanitary Service at No Cost for Up-keep.

Always looks the Quality Product it is.

Universally ordered by Architects and Engineers who want *The Best.*


WHALE-BONE-ITE THE BRUNSWICK-BALKE-COLLENDER-CO.

No. 21-9

For Extended Lip Bowls.

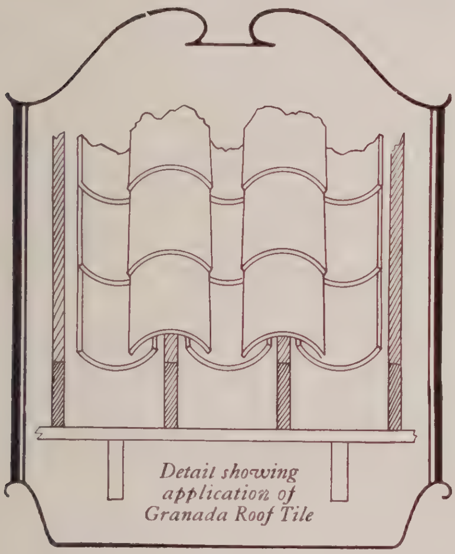
Sold by
Leading Plumbers and Jobbers everywhere.

If you cannot secure locally, ask Seat Department of makers.

(See Sweet's for detail catalog.)

MADE AND SOLD BY

THE BRUNSWICK-BALKE-COLLENDER CO.
623 SO. WABASH AVE. CHICAGO



Detail showing application of Granada Roof Tile

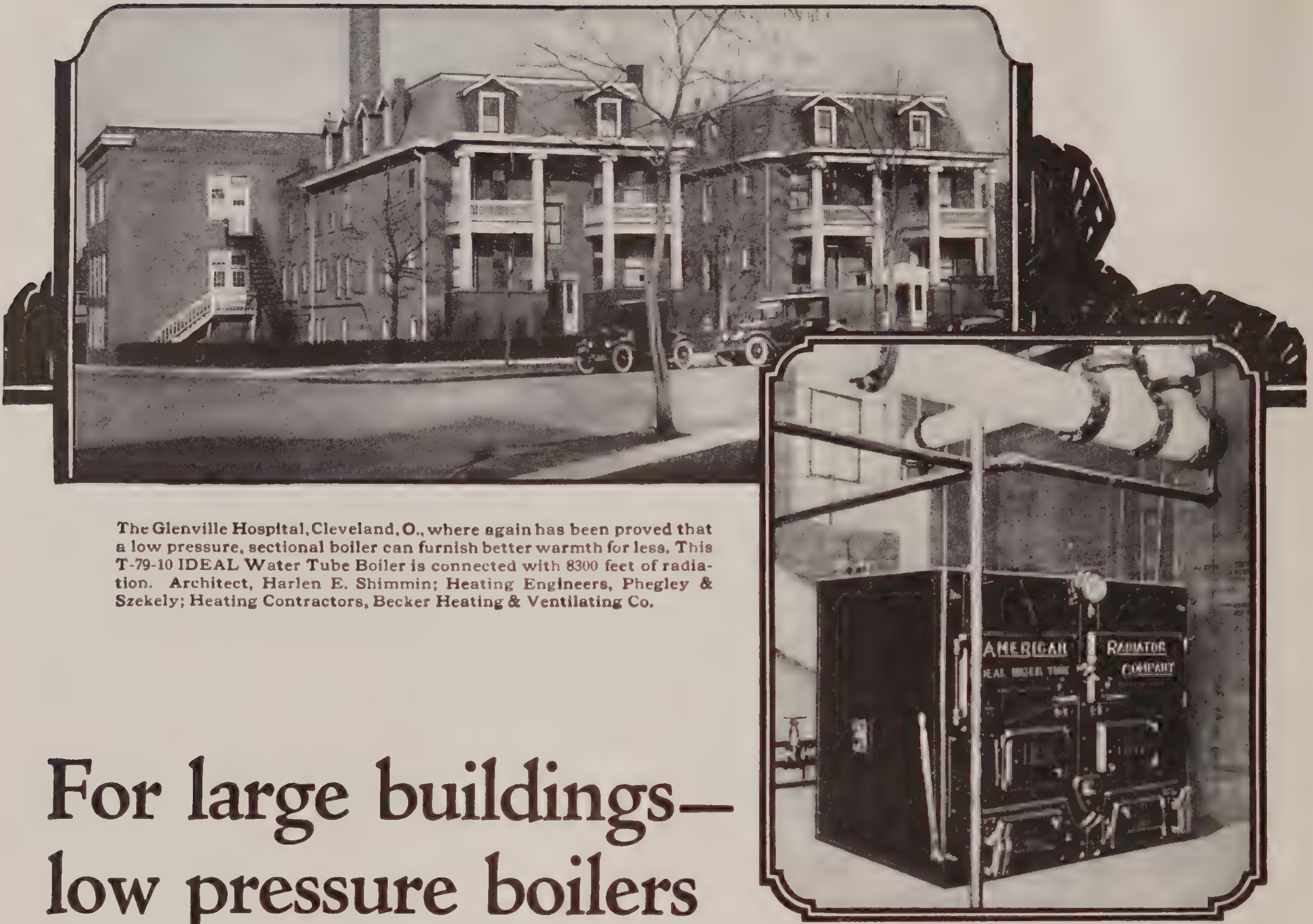
Varicolor Granada Roofing Tile

BEAUTY is enhanced, monotone is relieved, colorful life is added, by the use of Varicolor Granada Roofing Tile.

Widely varying tastes, as well as the most elusive color schemes, may be followed with harmonious blending of diversified colors, ranging from the medium and dark shades of red to the rich purples, and from warm, golden hues to the metallic blue of gun metal.

Durable—fireproof—a non-conductor of heat and cold.

"The Standard of Quality in Clay Products"
L.A. Pressed Brick Co.
Los Angeles, California
U.S.A.



The Glenville Hospital, Cleveland, O., where again has been proved that a low pressure, sectional boiler can furnish better warmth for less. This T-79-10 IDEAL Water Tube Boiler is connected with 8300 feet of radiation. Architect, Harlen E. Shimmin; Heating Engineers, Phegley & Szekely; Heating Contractors, Becker Heating & Ventilating Co.

For large buildings— low pressure boilers

IF THE HEATING PLANT for home, office or factory is important, for a hospital it is vital.

The officials of the Glenville Hospital, Cleveland, Ohio, realized this when, in 1921, they replaced their old worn-out heating plant with this IDEAL 79″ Water Tube sectional boiler.

Connected with 8300 feet of American Peerless Column and Wall Radiation, this single low pressure, heavy duty boiler warms every room of the original building and the new addition. A small tubular boiler supplies the sterilizing apparatus, steam tables and laundry with high pressure steam.

That the new plant is a great success is shown by the following statement received from the superintendent after the plant had been thoroughly tested:—

> "We find the boiler is satisfactory in every respect. Our Engineer seems to take a new pleasure in his work. We feel indebted to you."

There are so many interesting points of construction about the IDEAL 79″ Water Tube Boiler that a booklet is necessary to present them fully. Your name on your letterhead sent to either address below will bring it.

AMERICAN RADIATOR COMPANY

IDEAL Boilers and AMERICAN Radiators for every heating need

104 West 42nd Street, Dept. T-11
NEW YORK

AMERICAN IDEAL
RADIATORS BOILERS

816 So. Michigan Ave., Dept. T-11
CHICAGO

Plasticity

General Motors Building
Detroit
Albert Kahn, Architect

BECAUSE of its plasticity Tiger Finish works so smoothly that plasterers spread more in a day.

This means not only uncommonly smooth, even wall surfaces, but greater area covered and consequently distinct economy realized.

The Kelley Island Lime & Transport Co.
World's Largest Producer of Lime
Leader-News Building
CLEVELAND

When You Want Information About Catalogs

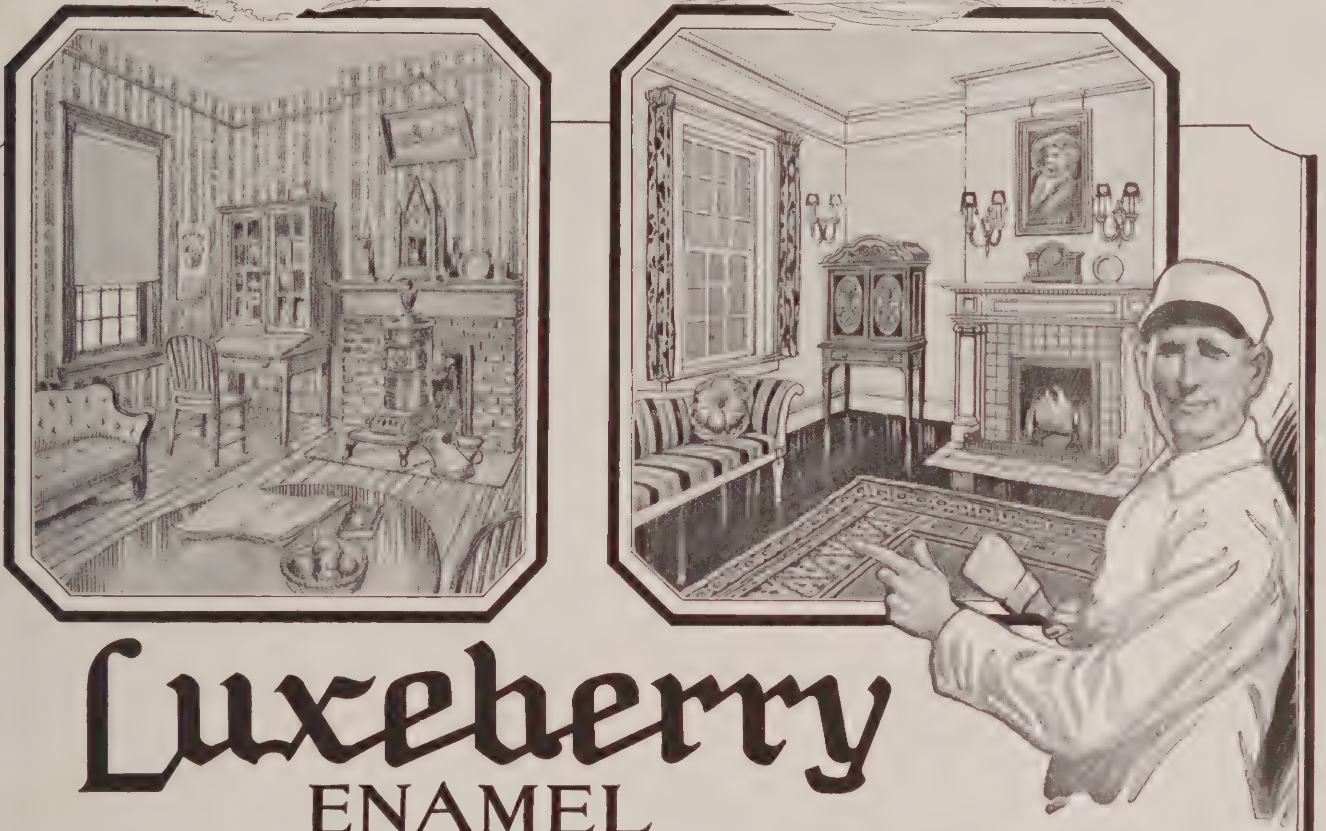
EVERY day in the architect's office the need for information about building materials and equipment comes up many times. The manufacturers have gone to great expense in describing their products in catalogs especially compiled for architects that will be convenient for you to file for quick reference.

THE ARCHITECTURAL FORUM publishes each month a carefully classified list of these catalogs so that you may know at a glance what is available.

Turn now to pages 75 to 84 of this issue and select those you need. Send us the list and we will see that you are supplied.

THE ARCHITECTURAL FORUM
142 BERKELEY STREET, BOSTON 17, MASS.

"What a trained architect can do for a house —



Luxeberry

ENAMEL

can do for any room in your house."

That sure, effective touch of skilled artistry changes a run-down structure into a beautiful residence; it transforms a dingy room to a sunny, airy, restful one.

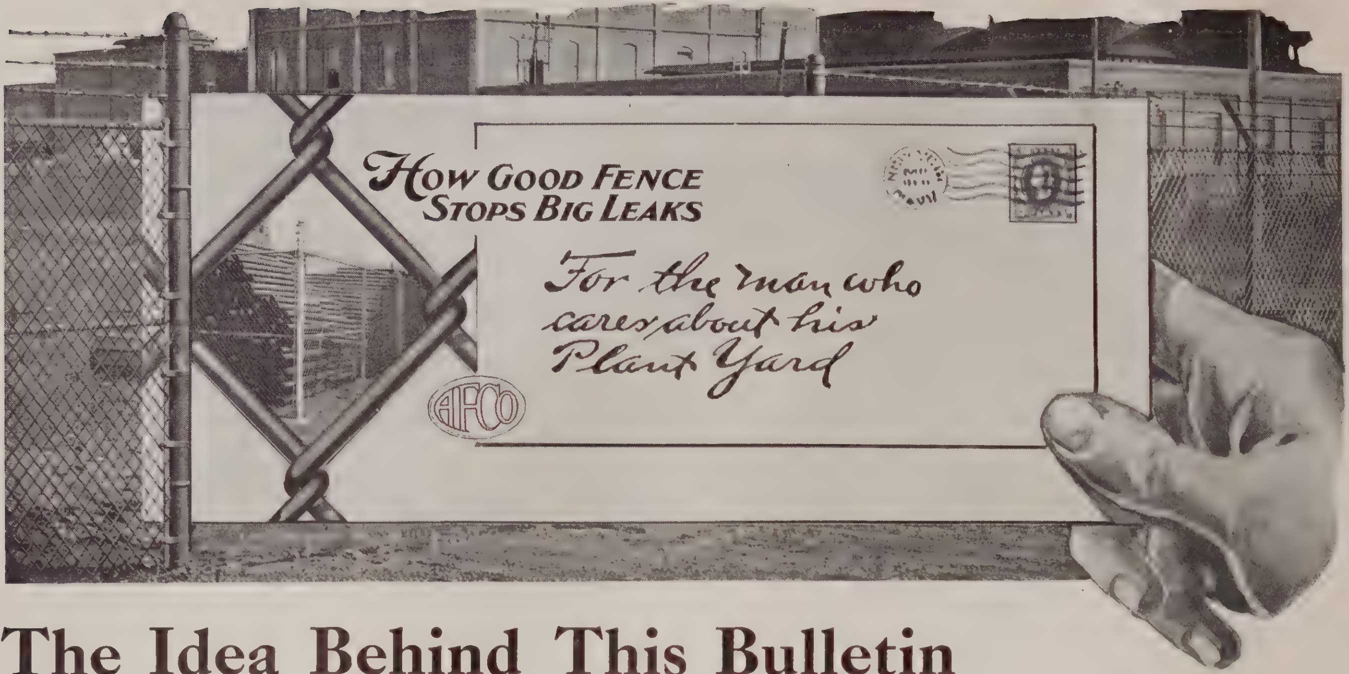
New Luxeberry Enamel works wonders in such a transformation. Its pure white gives the warmth and cheer demanded today; its soft, velvety lustre has nothing of the hard glare so tiring to the eyes in all earlier enamels; its permanence lends charm season after season.

Luxeberry Enamel will assure the enduring beauty of rooms you plan. It lends a richness and warmth that appeals instantly and that deepens in attraction with every passing year.

Manufactured by
the makers of
Liquid Granite
the World's Most Durable
Floor Varnish

"Save the surface and you save all" – Paint & Varnish

BERRY BROTHERS
VARNISHES
ENAMELS – STAINS
DETROIT WALKERVILLE, ONTARIO


How Good Fence Stops Big Leaks
For the man who cares about his Plant Yard
AFCO

The Idea Behind This Bulletin

THE REAL ECONOMY OF THE WELL FENCED PLANT is one which the architect can well afford to consider.

WHERE DOES THE EFFECTIVE PLANT AREA OF THE FACTORIES *YOU* DESIGN BEGIN ? Only with the plant walls ? Or the minute you step on the plant property—with the proper first wall of the modern plant—the steel fence ?

SEND FOR THE BULLETIN. Its message on the real value of good fencing will interest you.

You never see broken arms on AFCO Fence. Their integral construction prevents it

American Fence Construction Co. 130 West 34th Street
New York, N. Y.

Afco Barriers of Steel Fences

The Brick Architecture *of* the Colonial Period in Maryland and Virginia

By LEWIS A. COFFIN and ARTHUR C. HOLDEN

The admirable brick buildings of the colonial period in Virginia and Maryland form the subject matter of this useful volume. Each of the houses concerned was visited and studied by the authors and they present photographs and numerous full page drawings of exteriors and interiors, all carefully selected with a view to their practical, present day architectural value.

One volume, 9½ x 12 ins.

Price $16.50 postpaid

ROGERS AND MANSON COMPANY
142 Berkeley Street, Boston

Collected Papers on Acoustics

By WALLACE CLEMENT SABINE

Late Hollis Professor of Mathematics and Natural Philosophy in Harvard University

AN invaluable work on the subject of acoustics, embodying the result of years of experiment and research by one of the foremost authorities. Elaborately illustrated by means of diagrams and other cuts, the volume covers the governing of acoustic conditions in buildings of widely different classes such as theaters, music halls, churches and lecture rooms, besides that large class of buildings in which insulation of sound is necessary. The work is a summing up of what has been learned of the science of acoustics.

279 pages, illustrated; 7½ x 10½ ins.

Price $4 postpaid

ROGERS AND MANSON COMPANY
142 Berkeley Street, Boston

Kno-Burn
Metal Lath

"The Steel Heart of Plaster" Stops Fire—Prevents Cracks

The Tremendous Possibilities of Protected Frame Construction

SCIENCE has placed in the hands of architects a wonderful opportunity. It has developed and perfected

The Fire Resistive Frame House

a structure which in point of safety-affording qualities approximates the costly so-called "fireproof building," meets the nation-wide demand for "better" home building yet utilizes all the economy, flexibility and beauty of wood.

The method, vastly simple and *non-patented,* involves merely the covering of the wood structural members with steel lath and incombustible plaster, yet this new type of construction, after exhaustive tests by the Underwriters' Laboratories,

Has Been Given a One Hour's Fire Rating

The report of the tests and findings of the Underwriters' Laboratories constitutes one of the most important documents ever placed within the reach of architects—a book so valuable that you will not willingly take up your 1923 work without this information.

It is intended that every prominent architect in America should receive it. If your book has not reached you, drop us a line today.

Kno-Burn
Metal Lath
"THE STEEL HEART OF PLASTER"

KNO-BURN METAL LATH
The Steel Heart of Plaster
Stops Fire, Prevents Plaster Cracks

Samples and specifications by request

NORTH WESTERN
EXPANDED METAL CO.

1234 Old Colony Building, Chicago

Manufacturers' Catalogs and Business Announcements

CATALOG REVIEW

KOHLER CO., Kohler, Wis. "Enameled Plumbing Ware. Catalog F." 215 pp., 7½ x 10 ins. Bound in cloth.

An examination of the specifications for any building in which the use of plumbing occurs will show that architects well realize the necessity of using good plumbing and fixtures carefully selected with a view to their quality and their suitability for the buildings in which they are to be installed. The development in the use, design and manufacture of plumbing fixtures has been phenomenal. The time seems remote (though really not far distant) when a bath tub of tin or zinc was regarded as a luxury, while now habitations of practically every kind and of even the smallest cost are provided with plumbing fixtures of every sort. Along with increasing use has gone equal improvement as to design, manufacture and quality of material used, and it would be difficult to imagine much improvement over the fixtures which are now easily to be had at costs which are not prohibitive.

Among the leaders in all this improvement has been the concern issuing this well produced catalog in which are listed and illustrated the products which have made the firm well known. The form of presentation is logical, for upon many pages are illustrations of model bathroom installations, while upon the same page are named and listed the different items of equipment used. These bathroom installations are by no means of the *de luxe* order, and most of them are well within the reach of builders of moderate cost homes. Many of the pages give illustrations and descriptions of individual fixtures,—bath tubs, lavatories, drinking fountains, basins, trap standards, closet tanks, sinks and laundry trays,—together with the metal fittings which go with them. Part of the catalog is devoted to a description of the materials and technical processes which are used in manufacture.

INDIANA WORLD WAR MEMORIAL

Notice to Architects

Not later than March 15, 1923, the Board of Trustees of the Indiana World War Memorial will receive at its offices in The Chalfant, N.W. Corner of Pennsylvania and Michigan streets, in the city of Indianapolis, Indiana, competitive "designs, plans and specifications" for a World War Memorial to be erected in the city of Indianapolis, at an approximate cost of $2,000,000.

Full information in regard to the competition may be had by addressing

PAUL COMSTOCK, *Secretary*
The Chalfant, Indianapolis, Indiana

ANNOUNCEMENTS

A. S. Nibecker, Jr., formerly of the firm of Montgomery & Nibecker, announces the opening of an office for the practice of architecture at 421 Washington Bldg., Los Angeles. Manufacturers' samples and catalogs requested.

R. Clipston Sturgis announces that William Stanley Parker, William B. Coffin, S. Winthrop St. Clair, William Adams and Alanson H. Sturgis are now associated with him in the practice of architecture, the organization being known as The Office of R. Clipston Sturgis, Architect, 120 Boylston street, Boston.

M. V. Mowbray, Jr., announces the opening of an office for the practice of architecture at 4236 Foothill blvd., Oakland, Calif. Manufacturers' samples and catalogs requested.

William F. Gunnison, architect, 1666 Golden Gate avenue, San Francisco, announces the opening of a second office in the Mechanics' Institute Bldg., 57 Post street.

Charles L. Troutman announces that the firm of Capelle & Troutman has dissolved partnership, and that he will continue business in the offices, 409-10 American Trust Bldg., Evansville, Ind.

C. Davis Goodman, B. Arch., has recently opened an office for the practice of architecture at Suite 34, 14 St. John street, Montreal, Que. Manufacturers' catalogs desired.

Louis J. Laskin, architect, announces the removal of his office from 409 Proctor Bldg. to 12 East First street, Mt. Vernon, N. Y. Manufacturers' catalogs are requested.

Stanley Bruce Elwell and Robert Murray Blackall announce the formation of a partnership for the practice of architecture under the firm name of Elwell & Blackall, with offices at 44 Bromfield street, Boston.

Samuel H. Pitcher Co., Inc., civil engineers and architects, 44 Front street, Worcester, Mass., announce that John Tempest Walker will act as director of its architectural activities. Mr. Walker has had a wide experience as a practicing architect in New York, Pittsburgh and Boston.

VAN RENSSELAER P. SAXE, C.E.

Consulting Engineer

STRUCTURAL STEEL
CONCRETE CONSTRUCTION

Knickerbocker Building Baltimore, Md.

F. a.

THE ARCHITECTURAL FORUM

FEBRUARY
1923

NOTICE

STRINGER BROTHERS COMPANY

of Chicago

ARE PROHIBITED

TO MAKE, USE OR SELL

any fittings infringing upon Fruin patent No. 849,383 which is one of the fitting patents used in the well known system of Revent and Drainage Fittings sold under the 'F & W' trade mark by The Central Foundry Company.

F. & W.

TRADE MARK
(Reg. U. S. Patent Office)

THE CENTRAL FOUNDRY COMPANY

(exclusive licensee)

ON October 8, 1922, suit was begun by the Fruin & Walker Company and The Central Foundry Company, plaintiffs, against the Stringer Brothers Company, in the United States District Court, District of Illinois, Eastern Division, at Chicago, upon patent No. 849, 383 of John L. Fruin, owned by the Fruin & Walker Company, under which The Central Foundry Company is the exclusive licensee.

This patent is one of the fitting patents used in the well known system of revent and drainage fittings sold under the "F & W" trade mark and is a vented fitting particularly designed for taking care of the closet, bathtub and basin wastes.

The suit was particularly directed against fittings Nos. 458 and 158 of the Stringer Brothers Company, which they have been selling as the key fittings in the system which they have been putting on the market.

The plaintiffs in the latter part of October attempted to obtain preliminary injunction in the case, but this was strenuously resisted by the counsel for the Stringer Brothers Company, and as a compromise the case was set down for an early date.

The case came up for trial in Chicago on January 4, 1923, and the Stringer Brothers Company then realizing that there was no hope of winning the suit, appeared in Court and stated that they did not wish to contest a decree.

A decree was entered, adjudging the Fruin patent valid and infringed by the fittings made by the Stringer Brothers Company, and ordering the issuance of *a permanent injunction against the Stringer Brothers Company* prohibiting them from further making, using or selling any fittings in infringement of the Fruin Patent.

An arrangement has been made whereby the Stringer Brothers Company may dispose of a limited number of their fittings Nos. 458 and 158 which they had in stock.

THE CENTRAL FOUNDRY COMPANY

Subsidiary of

IRON PRODUCTS CORPORATION

(Exclusive manufacturers of the time-saving, material-saving and space-saving revent and drainage fittings sold under the 'F & W' trade mark)

Executive Offices: 41 East 42d Street, New York

WAREHOUSES: New York, 135th Street and Park Avenue
Brooklyn, 1434 Fulton Street
Chicago, 338 North May Street
Boston, 105 Cummings Street

ARCHITECTURAL HOME MAKING

THE attractiveness of home life begins in the drafting room. Long after the fee is paid and forgotten the thoughtfulness of the architect is remembered.

It is notable how many sun parlors are added to houses long after they have been built. It is but the addition of something which had been forgotten.

There is an ever-increasing trend "sunward" towards the enjoyment of sunshine and air made possible by the judicious but liberal use of better window glass. Cater to the "sunward" movement and reward will follow; principles of health, sanitation and human happiness will have been recognized.

The Mark On the Box

The long ellipse that appears on every box of genuine American Window Glass is an assurance of quality.

Within the ellipse is the grade mark, A or B. The B glass is of as consistently high quality as the A grade of ordinary glass, and our A grade is correspondingly superior. Demand the beauty, clarity, evenness and strength assured by this mark on every box.

AMERICAN WINDOW GLASS CO.
PITTSBURG, PA. U.S.A.

AMERICAN WINDOW GLASS CO.

GENERAL OFFICES: PITTSBURGH, PA. BRANCHES IN PRINCIPAL CITIES

*House at Winnetka
Illinois*

*Richard V. Murison
Designer & Builder*

Hoffman Casements

ESPECIALLY suitable to the small house because they combine efficiency and quality with a reasonable price. Outward folding, movable to either jamb, suspended entirely from the top.

ADVANTAGES: Smooth operation—clearance prevents sticking—weather tight—exact regulation of ventilation—cleaned from inside—use any kind of curtains—need no weather strips.

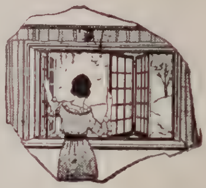
SEE OUR CATALOGUE IN SWEET'S

Pages 1310-1314

Portfolio of Detailed Drawings mailed to architects upon request — Filing size

Andrew Hoffman Mfg. Co.

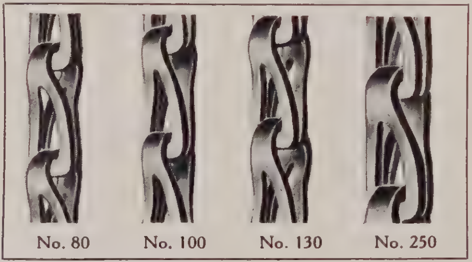
Hoffman Casement Window
900 Steger Building
Chicago



Write for illustrated booklet of interest to home builders

American Sash Chain

represents the maximum in strength and wearing qualities. It will outwear any other type of sash suspension material and always sustains its load.



We have standardized the sizes of chain to correspond with the weights of sash for which they are intended.

No. 80, for 80 pound double-hung Sash
" 100, " 100 " " " "
" 130, " 130 " " " "
" 250, " 250 " " " "

American Chain Company

Incorporated

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Boston
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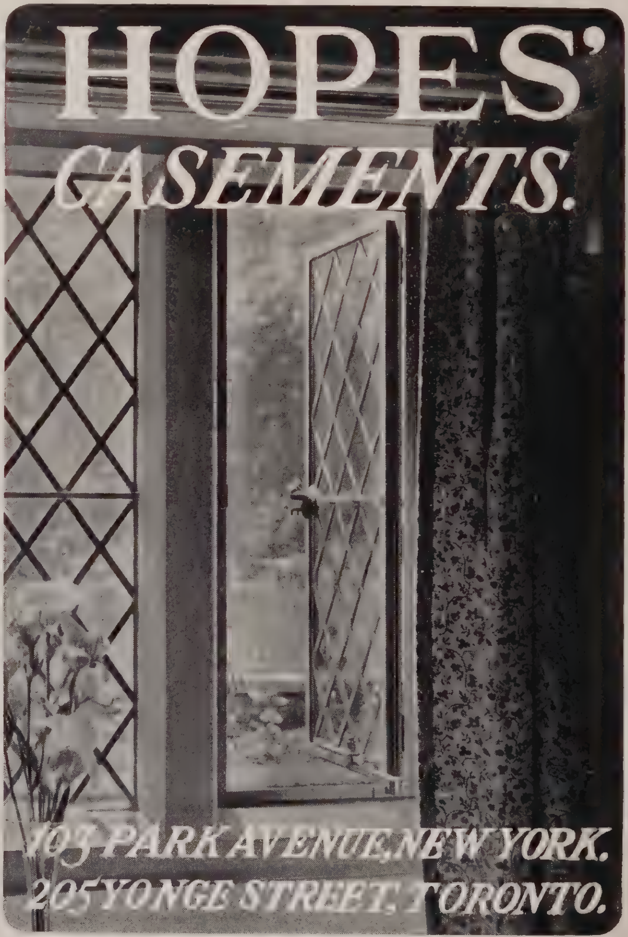
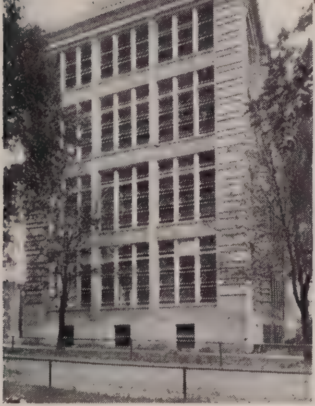


HOPES' CASEMENTS.

103 PARK AVENUE, NEW YORK.
205 YONGE STREET, TORONTO.



Adaptable!

Perhaps the best of the many good qualities of Lupton Projected Sash is its all-around *adaptability.*

For *Offices* it gives ample ventilation, protection against direct drafts when partly open, and close fit when shut. (For office portions of factories it can be made to match the openings and glass sizes of standard Lupton Pivoted Sash.)

For *Schools* and *Hospitals* the moderate price at which the above qualities are obtained makes it the ideal sash.

For *Bakeries, Dairies* and *Canneries* it is invaluable, because it permits screening without loss of ventilation.

And for banks, stores, clubs, and numerous miscellaneous buildings its architectural qualities make it "just the thing."

Write for new schedule of standard sizes: these sizes cover all usual needs; they cost less than special sizes, and can be delivered sooner.

DAVID LUPTON'S SONS COMPANY
Witte & Tulip Streets, Philadelphia

*Chicago	New York	Pittsburgh	Boston	St. Louis
*Cleveland	*Detroit	*Buffalo	*Atlanta	Baltimore

*Warehouses in these cities Agents in other cities

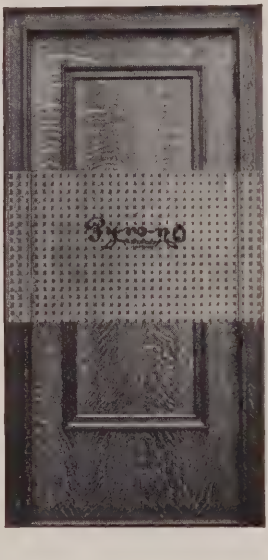
Canadian Manufacturers: The A. B. Ormsby Co., Ltd., Toronto

Lupton
INVESTMENT VALUE

Projected Sash

Py-ro-no
TRADE MARK REGISTERED

FIREPROOF VENEERED DOORS AND TRIM



Magnified section before veneer is applied

Showing asbestos sheathing indented into core

PYRONO doors and trim are recommended for use in office buildings, hotels, hospitals, apartments, schools and similar types of buildings for the openings to stairways, elevators, pipe shafts, corridor and room partitions and wherever ornamental, fireproof doors are desired.

Pyrono doors and trim are furnished in any design desired and in any cabinet wood. They are installed by carpenters just as regular hardwood doors and trim are installed.

A Few Notable Installations

Federal Reserve Bank Building, Chicago
Federal Reserve Bank Building, Kansas City
Drake Hotel, Chicago
Hanna Building, Cleveland
Cunard Building, New York City
Commodore Hotel, New York City

Full information with details of construction will be furnished architects upon request

The Compound and Pyrono Door Co.

Factory and General Offices
St. Joseph - Michigan
Representatives in All Principal Cities

Showing installation of sliding type of Varnum Engine — with connecting arms.

VARNUM Door Engines open and close doors as silently and easily as Ali Baba's "Open Sesame" moved the door to his treasure cave. By a mere touch upon a conveniently located electric switch, the Varnum Engine quickly opens or closes both sliding and swinging doors, automatically locking them shut. Varnum Engines may be installed out of sight. They are used extensively on grille doors or gates in front of Safe Deposit Vaults. They add to Banking Service and assure absolute protection. Send for blue prints and catalogue.

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That Pays for Itself With

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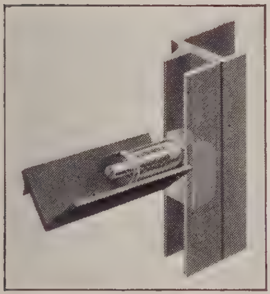

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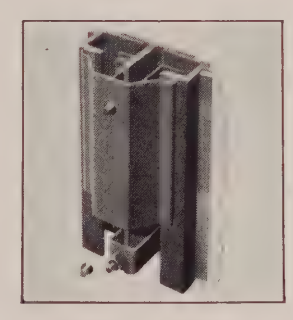

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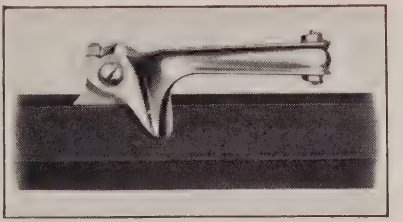

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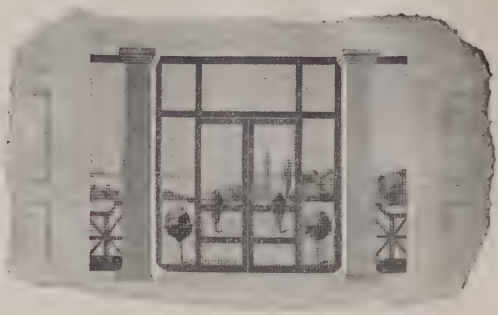

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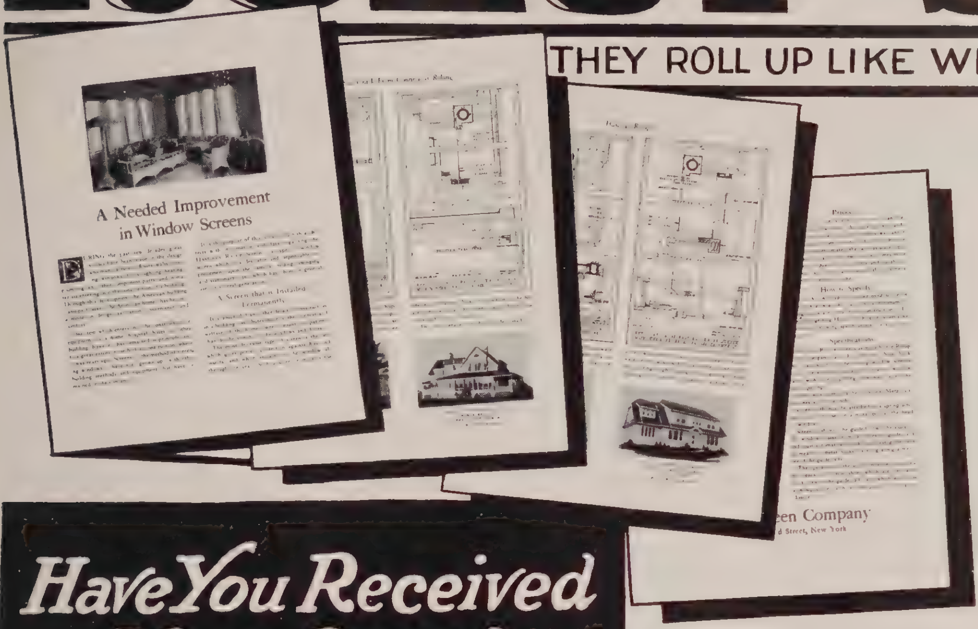

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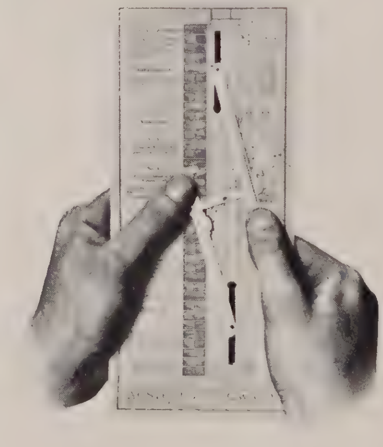

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ENGLISH CHAIRS. Their development from the fifteenth to the early nineteenth century. A portfolio issued in three parts, each containing 28 collotype plates, size 10x12 ins., with about 90 illustrations. Complete, $15. J. Tiranti & Co., London, S. W.

STUDENTS of the period styles find that the chair is among the most important of objects in which to trace the development of furniture forms. A comparatively late development, the chair hardly dates from much earlier than the seventeenth century excepting in the form of thrones or seats of honor for sovereigns and the very wealthy, the seating of people in general being upon benches or "forms." When the chair came into general use it was the object of unceasing development. In England its design was the result of influence from Italy, Flanders, Holland, Spain and France, and to the extent which English chairs embody in their design the result of all these influences is due a great part of their variety and interest.

The chairs of English types which are most interesting to present-day architects are of several kinds. The chair most typical of the Stuart era is that, generally of walnut or oak, having its seat as well as its back of woven canework set within a frame of wood richly carved in forms which strongly suggest the baroque, this same influence being also marked by the highly ornamented form assumed by the stretcher which connects the front legs. With the change of fashion which swayed England during the reigns of different sovereigns there came into use during Queen Anne's period a far different type of chair, essentially Dutch, having heavy cabriole legs and with the splat of the back of a heavy vaselike form. During the eighteenth century the English chair reached the highest point in its development in the work of Chippendale, Manwaring, Sheraton and Hepplewhite and particularly under the influence of the Adams. Chairs of this period embody the highest possible grace and subtlety of design with which went rare skill in the way of construction. Many furniture makers indeed worked exclusively upon chairs, and their output left nothing to be desired; it seemed to be perfection.

Charles II Armchair
An Illustration from "English Chairs"

The present work, with an introduction by Herbert E. Binstead, Editor of *The Furniture Record*, affords to architects, decorators and to students in general a complete survey of this important part of the field of decoration and furnishing. With accurate judgment and trained good taste the compiler has selected from museums and many English private collections examples which are representative of their types, and in excellent plates has shown chairs which may be compared in studying their forms. Obtaining a grasp upon the minutiæ of decorative styles and periods is of course a matter of study and comparison of types, and necessarily much must be done by study and comparison from works upon the subject, not always, unfortunately, as well presented as they are here.

In his interesting text Mr. Binstead points out the fact that eighteenth century chairs when reproduced today must often be considerably altered in the matter of size to adapt them to present-day use. There are few pieces which record more definitely than the chair the social and economic conditions of their times.

MODERN BUILDING SUPERINTENDENCE AND THE WRITING OF SPECIFICATIONS

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THE ART AND BUSINESS OF INTERIOR DECORATION. By B. Russell Herts, 134 pp., 7¾ x 10¼ ins. Price $5. Small, Maynard & Co., Boston.

GROWING realization upon the part of those who are building houses of the fact that there is a logical and definite relation between the structure itself and its decoration and furnishing has led to healthy activity in the field of what is broadly known as interior decorating.

It might be supposed that now as in centuries past the furnishing of a building would be quite as much a function of the architect as the designing of a structure or the supervision of its erection; one immediately thinks of the work of certain English architects of the Queen Anne and Georgian periods and their designing of what has been called "architects' furniture," and the mind reverts to the masterpieces of the Adam brothers and to the care and thought which they devoted to such details of furnishing as linen or silver for use in dining rooms. But intent no doubt upon the major problems of design, and preoccupied with the solution of structural problems, modern architects—particularly in America—have largely been content with handing over to the client a building structurally complete, allowing the real completion of the work—the final and eventual stage upon which so much depends—to pass from their control, and their clients have either been left without guidance, as usually happens, to make costly and sometimes irremediable mistakes, or have been led to avail themselves of the services of interior decorators to complete the architects' unfinished work.

These conditions have prevailed for many years until the growing interest of the building public, stimulated by wide reading upon the subject of decoration, furnishing and the correct use of the period styles, has led to clients' demanding of their architects the guidance which they have an undoubted right to expect, just as they would have advice as to the design of a facade or the detailing of a staircase. Many architects, too, now realize the folly of creating a beautiful building only to have its expression ruined by clients themselves or by well meaning individuals who frequently fail to grasp, somehow, quite the spirit which the architect intended should be expressed, and many of these architects are now undertaking to supervise, in different ways, these highly important details. This tendency, already widespread, and its relation to the interior decorator are subjects upon which much has been written and even more said.

In this work a well known interior decorator presents the case from a decorator's point of view. After explaining the basis upon which rests the profession which he represents, the nature and scope of its work and the methods of its operating, Mr. Herts gives a most helpful treatise upon the subject of decoration itself, and dwells upon different forms of wall treatment, various floor coverings, and appropriate kinds of furniture and draperies. With many years of successful experience to form a background the author covers decoration and furnishing of different kinds—of small, simple apartments, of apartments of greater extent, city houses, country homes, shops, banking quarters and theaters, and because of its growing importance and educational value something is said upon the subject of stage settings, their designing and lighting.

Besides explaining the position of the interior decora-

SPANISH INTERIORS AND FURNITURE

THESE portfolios present in the form of plates a selection of the best examples of Spanish domestic interior architecture and furnishing of the period from the sixteenth to the eighteenth century. The illustrations do full justice to the Spanish faculty of securing quiet architectural richness and unusual effects by the use of simple materials skillfully used, the decorative value of plastered walls when contrasted with simple, well planned woodwork in which much use is made of structural timbers, and the effect upon the interior of deeply splayed windows and doors used in Spanish interiors.

FOR the architect or decorator there is here given a wealth of ideas as to the possibilities of the Spanish style, which are as yet comparatively unknown. The furniture, pottery, tiles, ironwork and fabrics which go to making the Spanish interior so unusual are not difficult to secure, and their judicious combination might easily result in an effect out of all proportion to the cost involved. It is almost wholly a matter of tasteful and characteristic arrangement, and much of the skill which is necessary for arranging these effects is to be acquired from these illustrations of actual Spanish homes.

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tor and covering the subjects of furnishing and decorating, the volume presents what may be called the business side of the matter. An architect sells only his services and skill, but an interior decorator must carry a stock of everything which enters into the work of his profession, such as furniture, fabrics and antiques, and this involves a large overhead expense and presents many problems, since the work requires the most skilled of workmen who cannot be obtained when business is good and dismissed when it is slow.

Whatever be an architect's position toward the increasingly pressing subject of decorating and furnishing, it would be helpful to be familiar with an experienced decorator's point of view, ably expressed in this volume. An admirable feature of its preparation consists in its pointing out what are excellent examples of "what not to do." So many works dwell upon the importance of good arrangement while avoiding mention of what might be quite as helpful in suggesting what should be guarded against. Mr. Herts is generous in praise of what is deserving of commendation and equally frank about expressing condemnation of certain examples of decoration and furnishing, generally all the more deplorable since they are in hotels, theaters, restaurants and other public or semi-public places where their prominence makes them particularly unfortunate.

THE GEORGIAN PERIOD; STUDENTS' EDITION. Measured Drawings of Colonial Details. Portfolio of 24 pages of text and 100 plates. Price $15. U. P. C. Book Co., New York.

THIS is an abridged reprint of a well known and valuable work which has already appeared in a number of editions. Soon after its original publication it became evident that, however valuable it might be, the work would fail of fulfilling its mission unless it could be placed in the hands of all who needed it, and the large size and consequent cost made it impossible for many to possess it. To remedy this condition it was decided to make a careful selection of plates from the complete work and to publish them as a students' edition. While this by no means takes the place of the entire work, it does, nevertheless, place before the student, the draftsman and the young architect a source of inspiration that otherwise would not be had.

Among the plates are details of many of the well known colonial and post-colonial structures which have done so much to form the taste of present-day architects; some of the plates show details of work not so well known, and a few are of contemporary English work, all of it good and well worthy of close study.

FREDERICK LAW OLMSTED, LANDSCAPE ARCHITECT, 1822–1903. Edited by Frederick Law Olmsted, Jr., and Theodora Kimball. 131 pp., 6 x 9 ins. G. P. Putnam's Sons, New York.

THE year which marked the one-hundredth anniversary of his birth saw the publication of this volume on the work and achievements of the outstanding figure among American landscape architects. In these days we are so accustomed to landscape work, often involving engineering upon a large scale, which in an astonishingly brief time transforms bleak tracts into public parks or barren plains into suburban estates or country clubs that it is difficult to realize that not many decades ago landscape architecture in its modern sense was unknown, its early practitioners having to compel recognition from a reluctant if not unwilling public.

In September, 1857, Mr. Olmsted was appointed superintendent of Central Park, New York, and his cooperation with Calvert Vaux in preparing a plan for the

THE DAVANZATI PALACE, FLORENCE

A Restored Palace of the XIV Century, Measured and Drawn, Together with Short Descriptive Text, by
LOUIS CONRAD ROSENBERG

THIS work is issued to provide for architects, decorators and students a volume of moderate cost on one of the old Florentine palaces, a building which abounds in suggestions readily adapted to present-day work. The Davanzati Palace is one of the most notable of the early Italian palaces and belongs to a period when Italian architecture excelled in simplicity, charm, and all the qualities which lead to its use today.

In this monograph the famous building is illustrated in a most careful manner; half-tone reproductions of original photographs show the exterior and different rooms of the interior, all accompanied by measured drawings and full descriptions.

MEASURED drawings of bases, columns, capitals, mouldings and corbels; mantels, ceilings, door and window trim, paneled doors and inner blinds or shutters; floors laid in tile or specially modeled Roman brick; wrought iron hinges, bolts, knockers, escutcheons, holders for flag poles or torches, and hooks for wall hangings. Measured drawings for polychrome ornament on plaster walls or wooden coffered ceilings or tabernacle doors, with descriptions of colors used.

Architects interested in the design of any structural detail of an early Italian renaissance building will find here examples which in vigor and freshness leave nothing to be desired.

70 pp., 10½ x 13½ ins. Bound in cloth. Price $10

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park's development meant the beginning of a partnership which brought about public recognition of a new professional field. In the interesting account of Mr. Olmsted's travels mention is made of his visit in 1850 to Birkenhead Park in the suburbs of Liverpool, the successful designing of which, under the direction of Sir Joseph Paxton, may have influenced Mr. Olmsted's plans for Central Park, which meant the transformation of a discouraging tract of rocky soil into a metropolitan park. But beautiful as it is in many respects, Central Park, the work by which Mr. Olmsted is perhaps best known, falls far short of meeting its designers' expectations, for its soil is not adapted for growing trees, and it has always been subject to political control with detriment to its beauty and further improvement.

VISUAL ILLUSIONS. By M. Luckiesh, Director of Applied Science, Nela Research Laboratories, National Lamp Works of General Electric Co. 252 pp.; 100 illustrations; 6 x 9 ins. Price $3. D. Van Nostrand Co., New York.

IN this volume an author who is already well known by reason of his writings on color, light, shade, and various other closely related topics discusses a subject which is important as viewed from several different angles. It has, for example, a bearing upon architecture, painting and decoration, and during the world war the subject received a close study which led to its great importance in the development of camouflage. Psychologists have long held that only a part of what is perceived comes through the senses from the object, the remainder coming from within, and influenced probably to some extent by what has been called the "association of ideas," since our past experiences, desires, demands, and many more obscure influences create illusions.

These considerations, the existence of which is recognized even though their nature be but vaguely or only partially understood, form the subject matter of the work, and it presents many points of interest which are of particular concern to architects. The classic architecture of Greece gives evidence of there being possessed by architects of the period a highly developed knowledge of many geometrical illusions—methods of creating or correcting them—and during the best period of Greek art various "refinements" were worked out to deal with optical illusions. The Parthenon, for example, affords an opportunity for studying a correction upon a large scale which the designer of the building supposed would be necessary to satisfy the eye, for the long lines of the architrave, the beam which surmounts the columns or extends from column to column, would appear to sag if it were actually straight. Such considerations, or something very similar, account for the entasis of columns. Creating optical illusions with a view to increasing the apparent sizes of buildings has been practiced in all ages, and there are not lacking some modern instances, in churches particularly, where lines have been purposely given a tendency to converge or where lighting fixtures or other accessories are placed with a view to their increasing, in effect, actual dimensions.

This subject, like acoustics, also important to the architect, is a branch of science in which study and experiment have made the dim passages if not brightly illuminated at least sufficiently lighted to be traveled with safety and understanding. In 15 chapters Mr. Luckiesh covers, among other subjects, Vision; Some Types of Geometrical Illusion; Influence of Angles; Illusion of Depth and Distance; Color, and Lighting.

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THE ARCHITECTURAL FORUM

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THE EDITOR'S FORUM

IS ARCHITECTURE A DECLINING PROFESSION?

ON page 86 of the Service Section in this issue of THE FORUM there is presented in full an unusually bitter arraignment of architects and other important groups in the construction industry written by Edward K. Cormack and taken from *Forbes' Magazine*. The writer is a dealer in building material who has twice been president of the National Builders' Supply Association.

The article is a peculiar mixture of truth, half truth, and of biased opinion, but in discussing the badly disorganized condition of the construction industry facts are presented which should receive the earnest consideration of everyone interested in the industry or connected in any way with it. Much unfair and wholly mistaken criticism is directed toward the architectural profession, and the entire article in so far as it relates to the profession indicates the existence of one trend of public opinion which proves the need of broader publicity as to the service which architects render and to the profession's importance in the economic scale. If the attack directs the attention of architects toward this need it will not have been in vain.

A SCHOOL AT FONTAINEBLEAU

FOR two years there has been carried on at Fontainebleau a conservatory of music which has already proved its value. This school has been the nucleus of an institution of broader scope, and there is now being organized, as a summer course, a school of the fine arts, with particular attention given to architecture and painting. The Fontainebleau School of Fine Arts does not duplicate any course of study which already exists in France or America. It is a summer school only and is designed as a post-graduate school for advanced students able to benefit by a unique opportunity.

There is perhaps no place in the world better adapted for such study than the palace of Fontainebleau, situated within easy distance of Paris and constituting one of the national architectural monuments of France, upon which many great French and Italian masters have left their imprint. Special rates for students have been made by the steamship lines, and this together with provision made for the accommodation of students will bring the cost of attendance to within $500. The school is operated under direction of the Beaux Arts Institute of Design, and Whitney Warren is actively carrying on the work so faithfully done by his brother, the late Lloyd Warren. Applications should be made, for architects to Whitney Warren, 126 East 75th street, and for painters to Ernest Peixotto, 215 West 57th street, New York.

A REPORT REGARDING SMALL HOUSES

THE Building Code Committee of the Department of Commerce outlines in a recently published report what it believes to be the minimum requirements to be enforced by cities in their building codes for 1- and 2-family houses, and in an appendix discusses general good practice in small house construction. This report represents the result of careful consideration and research by government and municipal officials, architects, engineers and officers of various trade associations. It deals with the construction of houses of masonry, concrete and frame, the frame types including stucco and veneer, and it is expected that the general adoption of the provisions of the code, with consequent modification of present unjust and wasteful requirements, will result in conservation of building material and the saving of millions of dollars.

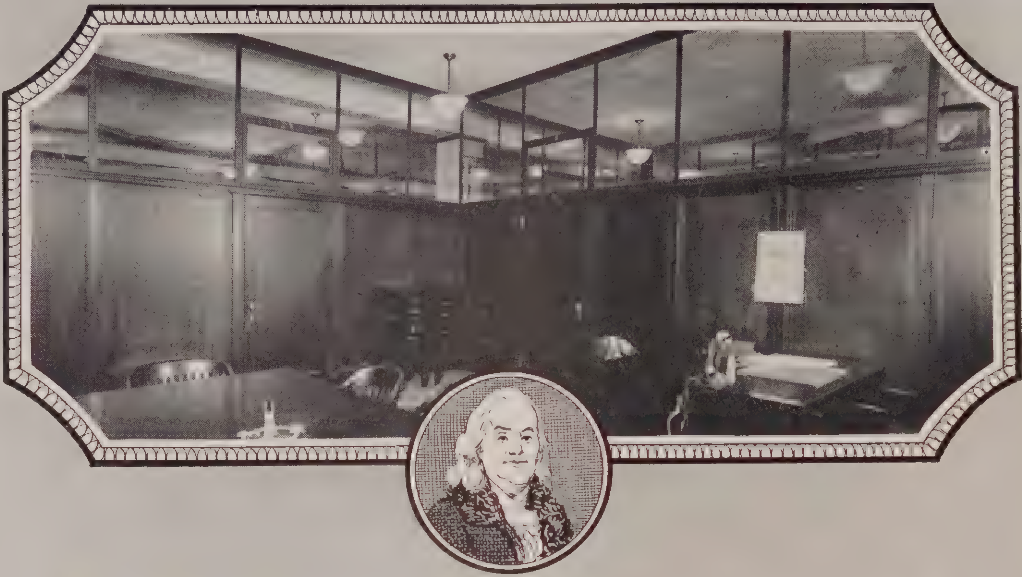
Among other recommendations the report suggests that building codes permit 8-inch solid brick and 6-inch solid concrete walls for 2½- and 3-story dwellings accommodating not more than two families each; that 8-inch hollow building tile, hollow concrete block, or hollow walls of brick (all rolock) shall not exceed 20 feet in height to the gables, and that frame construction be limited to 2½ stories. Metal lath and plaster on wood studs properly firestopped is approved for party and division walls, but at least every alternate wall in row housing must be 8-inch solid brick or concrete or 12-inch hollow building tile, concrete block or hollow wall of brick.

Recommended requirements covering almost every detail of construction are followed by pages containing directions for the use of different building materials. The report comprises 100 pages, including 30 illustrations, and can be had for 15 cents from the Superintendent of Documents.

CORRECTIONS

THE detailed drawing of an American walnut highboy, belonging to the Metropolitan Museum of Art, included in the Decoration and Furniture Department of THE FORUM for January was prepared by Verna Cook Salomonsky of New York. By an error her name was omitted from the drawing, and we are glad to make acknowledgment.

IN connection with plans shown with the article entitled "Modern Hospital Design" in THE FORUM for December several acknowledgments should have been made. On page 249 Fig. 4 is an adaptation of a plan by George B. Post & Sons; Figs. 5 and 6 are adaptations of plans by Richard E. Schmidt, Garden & Martin, and Fig. 7 an adaptation of a plan by Berlin, Swern & Randall.



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Benj. Franklin

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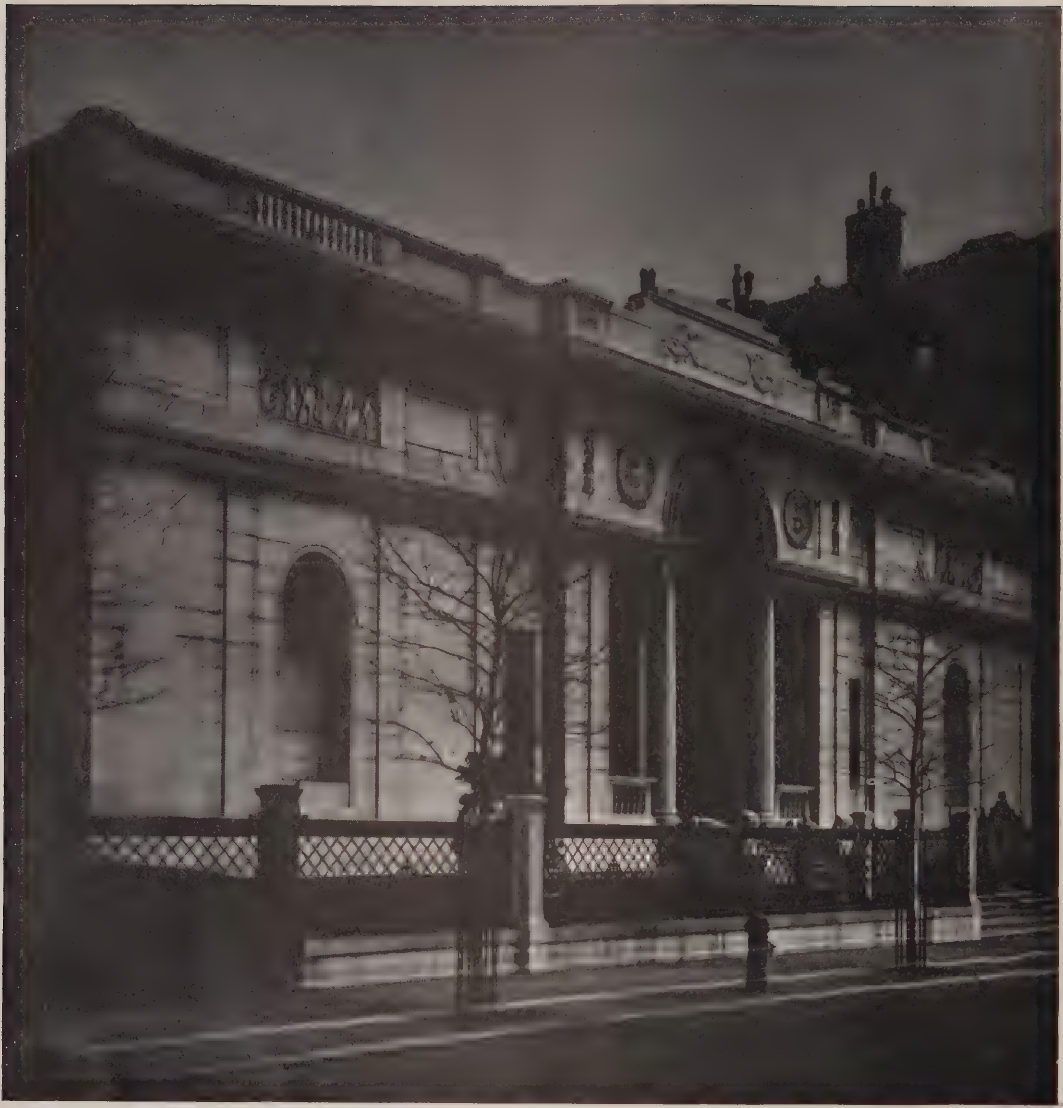

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The
ARCHITECTURAL
FORUM

VOLUME XXXVIII FEBRUARY 1923 NUMBER 2

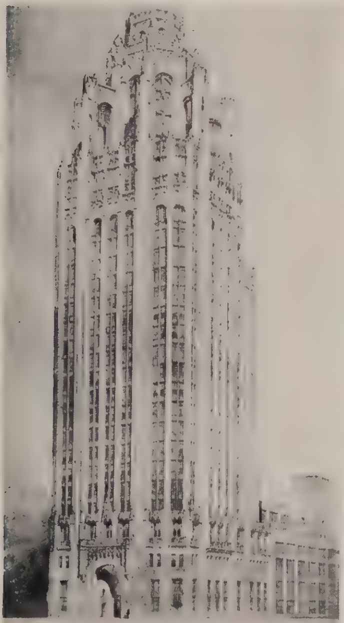
High Buildings and Beauty

PART I

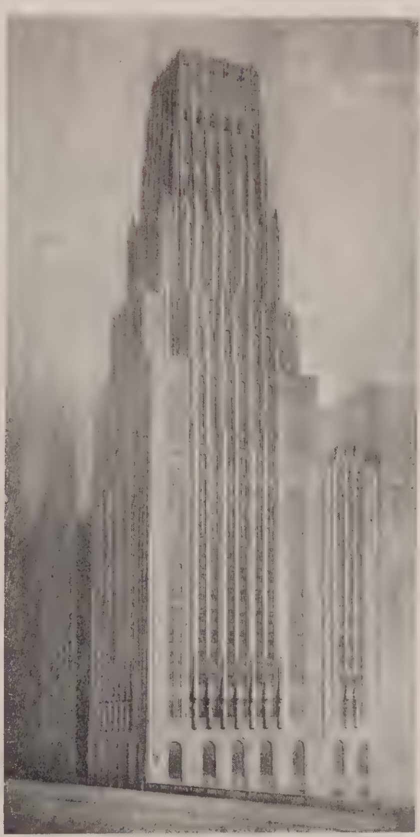
By IRVING K. POND, F.A.I.A.

SOME little time ago I discussed in these pages the matter of high buildings as affected by zoning laws,* and while I bore upon design it was upon the general idea rather than upon the ideal—that is upon an *ideal* of *beauty* which might find expression in a particular structure conditioned by limitations of environment, height and setbacks. In mere suggestions of sketches I showed how the problem of supplying light and air to streets and lower stories had been met and after a manner solved in other ages and countries, and I indicated the path of departure along the line of the American idea. I suggested that offsets as now required under a zoning law contained within themselves æsthetic possibilities in design and freshness of architectural style as well as ameliorating conditions of daylight eclipse and of insanitation. I was asked by the Editor of THE ARCHITECTURAL FORUM to follow up that discussion with one bearing directly upon the æsthetic element, and I consented with some hesitation to do so.

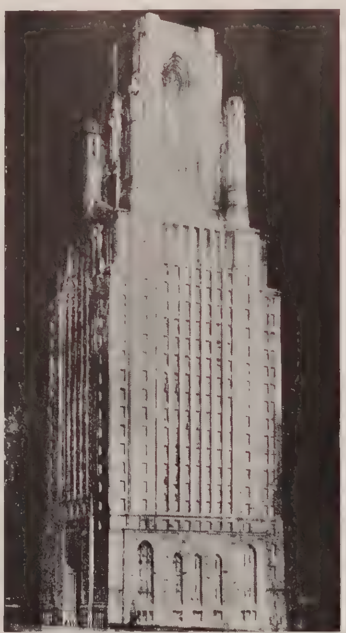
Conditions interposed which delayed the fulfillment of my promise, and now a circumstance has intervened which would seem to make a complete fulfillment unnecessary—at least which would seem to suggest a shifting of my point of attack; and that circumstance is the consummation of a competition for an office building to house the activities of a great newspaper corporation. As the competition was fairly widely advertised, I violate no confidences in saying that it was instituted by *The Chicago Tribune*, which has sought for



First Prize Design
John Mead Howells and Raymond M. Hood
Associate Architects



Second Prize Design
Eliel Saarinen
Architect



Third Prize Design
Holabird & Roche
Architects

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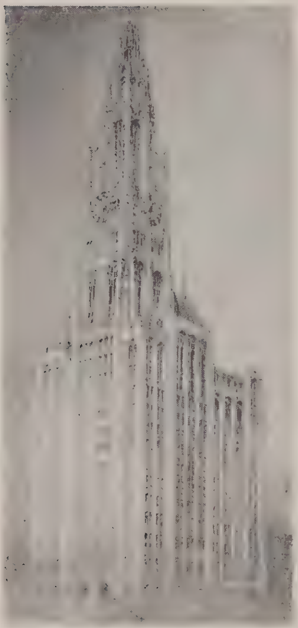
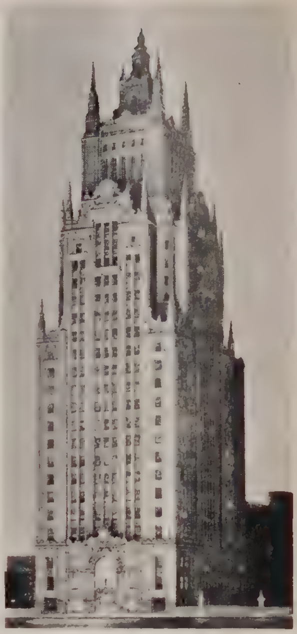
*October, 1921



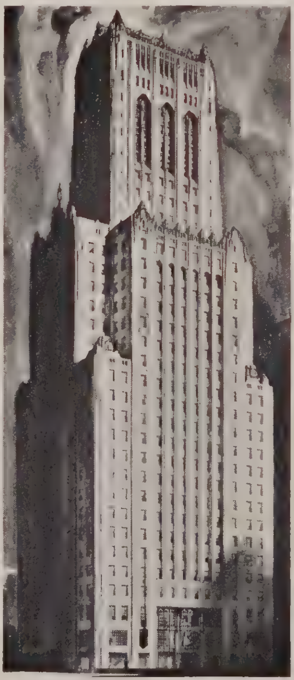
Invited Design
James Gamble Rogers, Architect

itself "the Most Beautiful Building in the World." I capitalize because that was the originally expressed desire of the owners, and only later was the idea so modified as to indicate that the design was to be the most beautiful which could express the ideals of *The Tribune.* It was this modified desire which made not altogether unseemly a jury composed of four officials of the corporation —plus one professional architect for a flying jib.

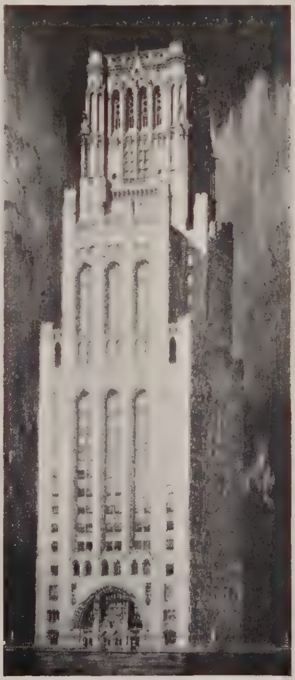


Honorable Mention
D. H. Burnham & Co., Architects

During the progress of the competition, from its inception to its conclusion, *The Tribune* continually published cuts of buildings of acknowledged high quality of design, ranging from two-storied palaces in the Italian renaissance through oriental tombs and domed mosques and Christian churches, through modern imitative collegiate buildings to the richest ecclesiastical and communal expression of the middle ages. Accompanying each presentation was the question: "Is this to be the type of architecture embodied in *The Tribune's* new home?" No hint from *The Tribune* was ignored by the competitors, and some feature from each type of building presented appeared in the final drawings. But the thing which touches my æsthetic sense most deeply is the irresistible conclusion reached by every competing architect,—that *height* is an absolutely necessary concomitant of beauty, at least in an office building; and the intense mental and emotional strain which went into the preparation of these designs focused itself in great measure on how to effect a transition from the 260-foot base devoted to use to the 140- to 250-foot superstructure so essential to beauty!



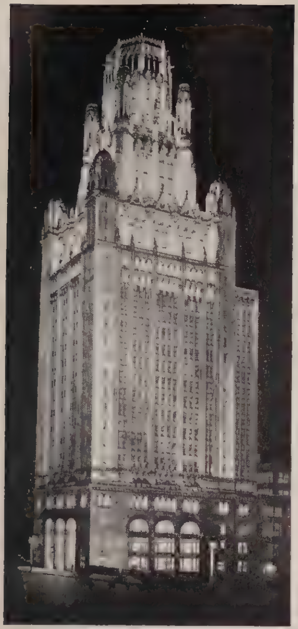
Honorable Mention
Andrew N. Rebori
Architect



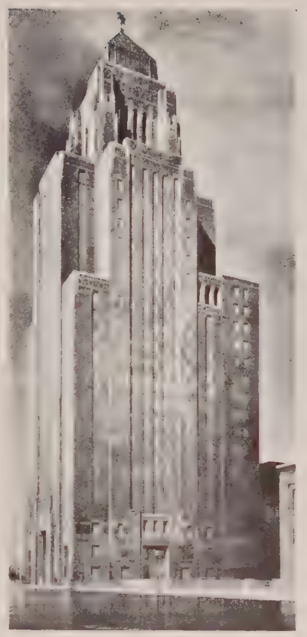
Honorable Mention
Richard E. Schmidt, Garden
& Martin, Architects

There was, evidently, unanimity of opinion that *The Tribune* could not be interpreted in terms of use or service, no matter how spiritually that service might be rendered or expressed, without some superimposed feature,—often the merest claptrap and fol-de-rol,—to catch the public fancy. Many designs —without symbolism, let us hope, and without any intent toward interpretation —were claptrap from the base courses to the pinnacles—mere applications of frippery. Only into one design, that placed second by the jury (but placed first by over 90 per cent of the public, lay and professional, who saw the drawings), did the element of exalted spirituality enter, and it did enter and permeate this, the only well-nigh structurally pure and thoroughly logical solution of the problem of the lofty steel-framed structure. This design was presented by Saarinen, of Helsingfors, Finland, who, perhaps because of his remoteness from contaminating influences, and perhaps because of his own fine intuitions, was able to see the problem clearly and see it whole. Excepting as to the low, simple first story, Saarinen's forms are steel forms clothed in stone, and not, like those of the design placed first by the jury, stone or masonry forms stayed and stiffened to their task by steel; nor like those of the design unaccountably placed third, whose monumentally massive, crypt-like chapel of masonry crushes the hybrid substructure of masonry and steel. There were one or two designs which recognized the steel structure and covered it logically,—but none in subtlety or refinement came within hailing distance of the design from Finland.

It will be interesting to study the designs submitted in this competition, both from the standpoint of the results achieved and from that of the attitude of

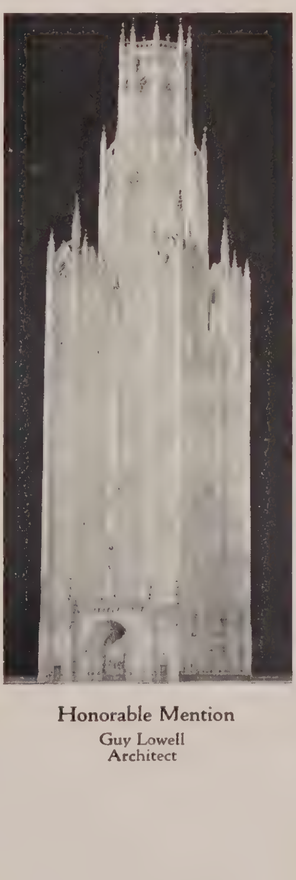


Honorable Mention
Lucian E. Smith, Architect

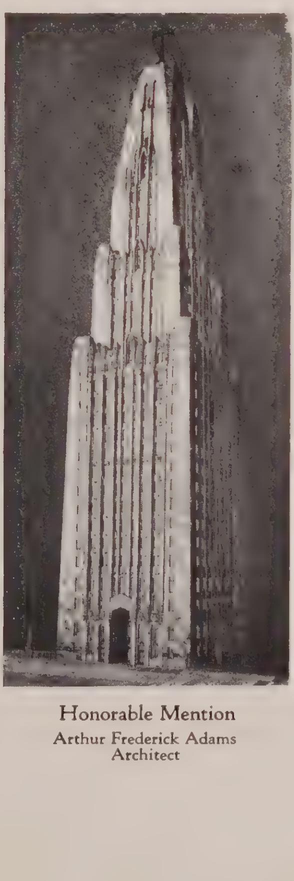


Invited Design
Bertram G. Goodhue, Architect

the various architects toward the problem. First, the designs range all the way from the logical presentation by Saarinen to the distressing nondescript whose author is and shall be nameless. They range from a treatment expressive of the steel framework, which is an absolute necessity to the structural integrity of every design presented, to a masonry treatment denying the presence of the steel; ranging through the intermediate steps, which as in the design placed first, include a dominant vertical expression of masonry in conjunction with a sub-dominant vertical treatment of the steel structure, to other and intermediate steps in which the conditions of treatment are reversed; ranging through a laminated treatment showing, as in the design placed third, massive masonry superimposed upon steel-stayed masonry much lighter in character, this in turn superimposed upon a firm masonry base. Again, the designs range all the way from those one would expect to find emanating from the brain of a confectioner, through those from one in whom the structural sense is undeveloped, though perhaps present, to those from others to whom structure is basic in architecture, and must be recognized, if not in a pure, then in a pseudo, expression. And again, lying deeper than all this, is the element of spirituality. This element has, to my mind, received a manifest embodiment in but one of the designs submitted (that placed second). Many have sought to achieve an expression of spirituality by the introduction of ecclesiastical forms and masses, but in all cases have signally failed. Placing the semblance of a chapel or of a church tower upon a commercial building, or upon any other type of structure for that matter, will not necessarily imbue that structure with an essence of spirituality, though that seems to have been the end sought by so many of the designers in this competition.



Honorable Mention
Guy Lowell
Architect

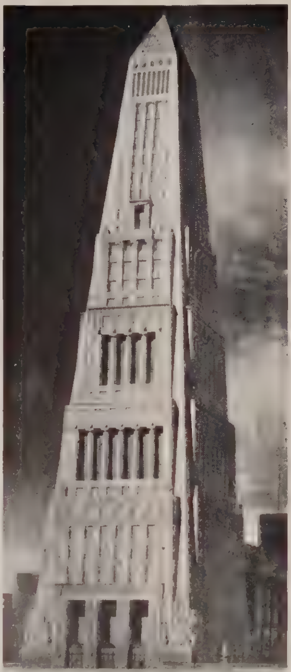


Honorable Mention
Arthur Frederick Adams
Architect

The introduction of numberless pinnacles and flying buttresses in steel and terra cotta does not produce an illusion of spirituality, though so many sought, by such puerile and ineffectual means, to accomplish it. The introduction of a pointed arch does not insure a spiritual presence. Spirituality, that rare compound of grace and charm and mystery, is not achieved by setting up a mediæval cathedral tower upon a modern thoroughfare and grouping about it, seemingly, a cluster of vertically elongated chapels. Although by this treatment the ecclesiasticism generally associated with the forms has been made to vanish—has been made to go out through the office windows, as it were—the structure has not necessarily become the abode of that spiritual quality without which architecture is naught.

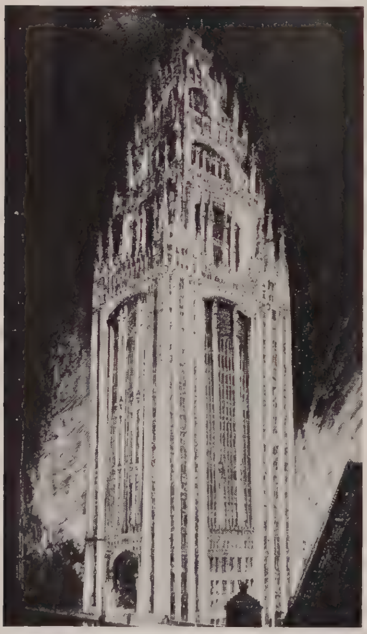
Seemingly the designers who commandeered the renaissance forms did not seek to enshrine the spirit, if, indeed, any of the others who referred their draftsmen so assiduously to the plates and files and photograph cabinets did so seek. Only one in all the multitude of competitors seems to have come to the task clear eyed; and he, seeing the forms which would fit, himself put them on paper, himself made them visible to others, himself by a sincere attitude toward the problem induced the spirit to hover over his pen and finally to enter into his design. One or two others—all Americans—had, perhaps, a similar vision, but in them it cannot have been so clear.

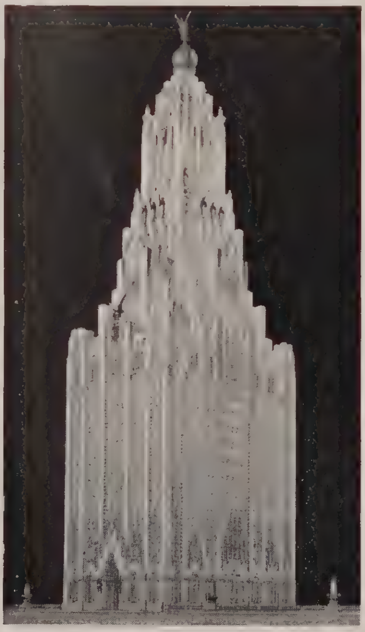
The really disheartening aspect of this collection of designs is that, outside of the work of a small half-dozen, it seems to demonstrate so palpably the absence of a fine idealism among the architects of the 22 nations represented in the competition. No limitations were imposed excepting that beauty was to be achieved; and, with the few exceptions noted, those who rose above the commonplace contented themselves with performing stunts of draftsmanship and design; with placing unrelated mortuary chapels, crypts, cathedral spires, and "Boston stumps" upon under-developed office buildings! Why was the spirit of beauty so evasive all the while? Why did she content herself with merely flitting across the sheets of drawings and refusing to enter into the structures? Is it because while draftsmen have learned to draw, architects have not learned to build? One could almost guarantee to pick out from among the drawings those "rendered" by the designers themselves. Some—many—of the "renderings" were stunning bits of artistry and might almost have compelled an acceptance of the designs they bodied forth. Perhaps it were too much to say that that was the case with two of the premiated designs.

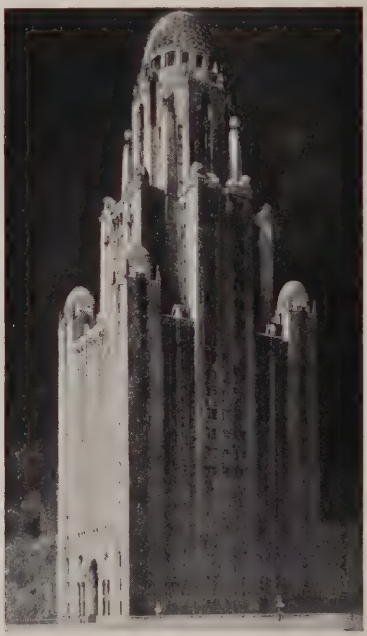

Alfred Fellheimer, Steward Wagner
Associate Architects

An interesting feature of the designs was the display of the national or racial limitations on the part of the designers. I shall take this up in another article when I analyze the various types of design presented and try to study the attitude of the architect in approaching his problem. I imagine the proposition would stagger me and that I would move, bewildered, toward it!—to have unlimited millions with which to produce transcendent beauty! And knowing my own probable reaction, I am not so much at a loss to comprehend why the expenditure of the $400,000 or so, which it cost to produce these competition drawings, resulted in so few designs in which the spirit of beauty inhered.

The results of the competition demonstrate, too, that the competing architects hold the setback, in some form or contrivance, as constituting an element in architectural beauty. This was not the case until quite recently; and then, as I made clear in my paper referred to at the beginning, the initiative was not taken by architects who had apprehended the æsthetic possibilities inhering in the scheme, though the experience of ages should have counted for something, but by altruists who sought to ameliorate untoward physical conditions. But the designs under consideration indicate that the scheme—as ministering to the possible achievement of the highest beauty—has been adopted by the profession generally, to be employed even in this case where no zoning laws nor legalized restrictions as to setbacks imposed purely physical limitations on the designer. Into this and other details I propose to enter more fully later.


Design Submitted by
Louis Bourgeois, Francis E. Dunlap,
Charles L. Morgan, Associate Architects


Design Submitted by
Albert J. Rousseau
Architect

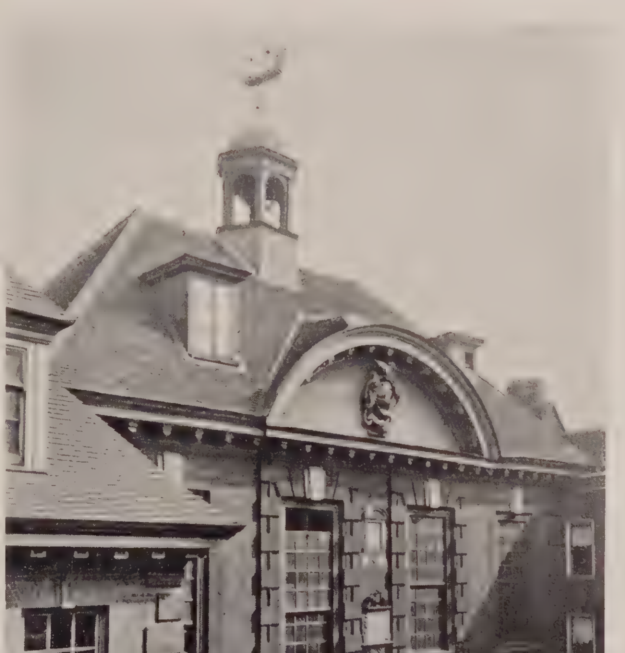

Honorable Mention
Alfred Morton Githens
Architect

Sir Christopher Wren, 1632-1723

By HAROLD DONALDSON EBERLEIN

ON the 25th of February, 1723, Sir Christopher Wren died at his home at Hampton Court, and was laid to rest a few days later in the crypt of St. Paul's. Most readers are familiar with the last lines of the epitaph inscribed on the simple stone that marks his tomb—"*Lector, si momentum requiris, circumspice*"—"Reader, if you seek his monument, look about you." The preceding lines of his epitaph, however, are less generally remembered. Done into English they read, "Beneath lieth Christopher Wren, the builder of this Church and City, who lived more than ninety years, not for himself, but for the public good." It is the aspect of his career thus summarized that chiefly comes to mind this month when the bi-centenary of the death of England's illustrious architect is being observed.

A man of the broadest culture and sympathies, of manifold activities and of marvelous industry, Sir Christopher Wren in his own day exercised an influence hitherto unparalleled in the sphere of England's architecture; today the direction his vigorous personality and convinced conceptions imparted to the current of architectural development is little, if any, less felt than while he was alive. In view of this enduring effect he produced upon the trend of that "art of well building" he so ardently practiced, it will not be amiss on this two-hundredth anniversary of his death to consider one phase of his work that is too often overlooked, eclipsed as it is by the fame of his better known achievements which challenge the eye in London, Oxford and Cambridge, and are familiar the world over through oft-published illustrations.



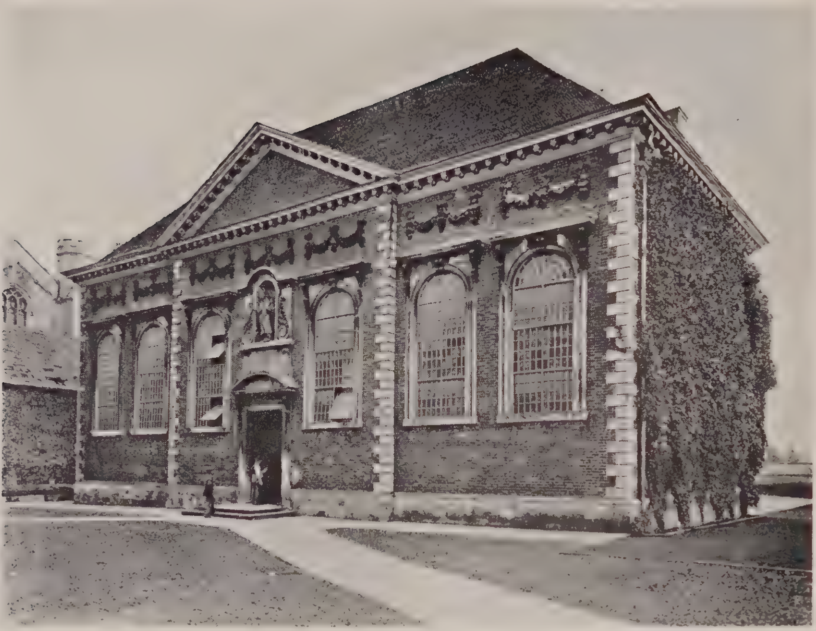
The Guildhall, Rochester (1687)

Courtesy of Messrs. B. T. Batsford, Ltd.

This well-nigh forgotten phase embraces the domestic work to which Wren now and again turned his hand during the course of an exceptionally crowded career that was mainly occupied by undertakings of a public or monumental sort. The building of St. Paul's, the rebuilding of the burned City churches, the creation of the Sheldonian Theater, or of his varied collegiate and hospital work—any of these alone would have sufficed as a patent of brilliant fame and have established his unquestioned pre-eminence in the annals of British architecture for all time. The tale of his combined accomplishments is truly amazing. And to this astonishing list we must still add the domestic item. The instances are not numerous and, from force of circumstances, were only incidental to his more exacting responsibilities, but they bear the distinguished impress of his characteristic manner and richly deserve study. That he should have wrought so much and such divers work is all the more astonishing when we remember that he did not begin to practice architecture until he was about 30 years old and that, prior to that time, he seems not to have made it a special object of study.

Born October 20, 1632, at East Knoyle in Wiltshire, of which parish his father, the Reverend Christopher Wren, was rector, he was a delicate child and because of his tender health was not sent to school until after he had reached what for those days was considered the mature age of nine. When Wren was but four years old, his uncle, Bishop Matthew Wren, was translated from the see of Norwich to that of Ely and thereupon resigned the deanery of Windsor and the registrarship of the Garter. These two important offices the king then conferred upon the Rector of East Knoyle, and thenceforth the young Christopher passed his time between the deanery at Windsor, East Knoyle, which living his father retained, and the rectory at Great Hasely in Oxfordshire, a benefice the Reverend Christopher Wren also held.

The little Christopher's first steps in classical learning were "committed to the care of a domestick tutor, the Reverend William Shepheard." A child of unusual parts, sensitive and mentally precocious, he not only made rapid progress under his instructor but, we may be sure, acquired a very



Courtesy of Messrs. B. T. Batsford, Ltd.

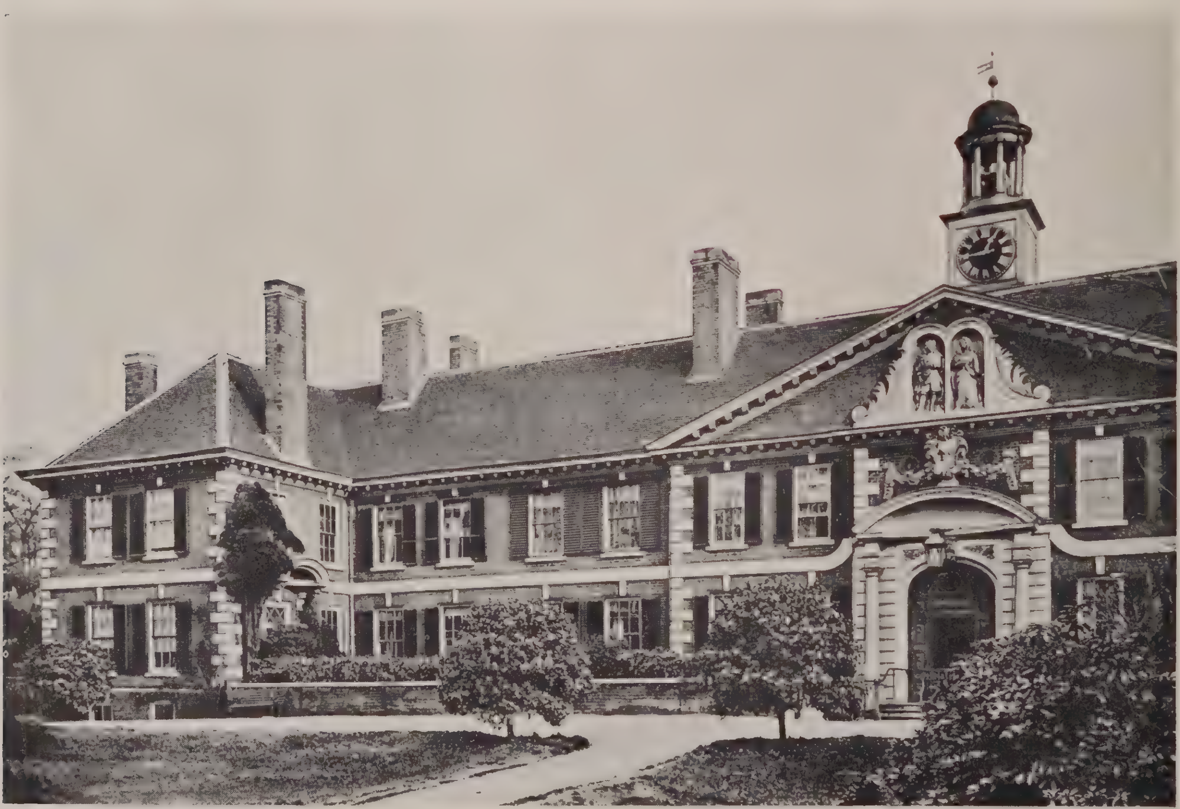
Great Hall, Winchester School (1684)

lively interest in public affairs in the atmosphere of a household bound by the closest personal ties and sympathies to many of the principal actors in the events of that stormy period.

In the same year that Christopher began his school career under Dr. Busby, at Westminster School, civil war broke out. Doubtless he had his share, along with the other Westminster boys, in aiding the choristers and vicars-choral in their successful defense of the abbey against the apprentices' attack in 1642. His Latin letters to his father testify not only to his fluent skill in that tongue but also to his loyal royalist sentiments and his loathing of the ways of those who were bringing such misfortunes upon his family and all the king's adherents.

In 1643 Susan Wren, Christopher's elder sister, had married the Reverend William Holder, sub-dean of the chapel royal, who was, according to Aubrey, "a handsome, gracefull person of delicate constitution," very helpful in the education of his young brother-in-law, Christopher, "a youth of prodigious inventive wit, of whom he was as tender as if he had been his owne child." Mr. Holder it was who gave the boy his "first instruction in Geometrie and Arithmetique," and fostered that mathematical bent that was destined to bring distinction in later years.

Between Wren's leaving Westminster School and going to Oxford occurred an interval of three years,



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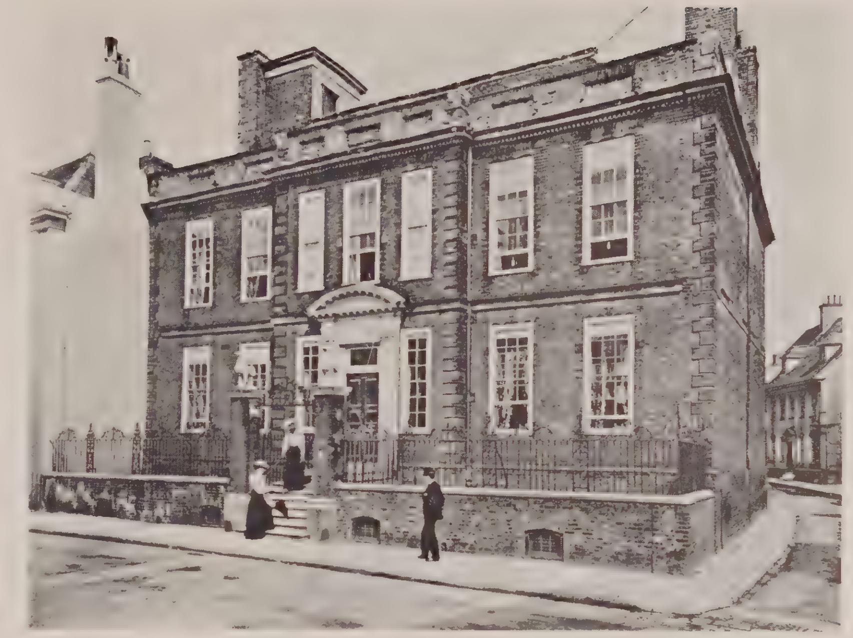
Entrance Front, Morden College, Blackheath (1695)
Sir Christopher Wren, Architect

a part of which time, at least, he spent in London as a pupil and assistant to Sir Charles Scarborough, one of the foremost mathematicians and physicians of his day. Here Wren was ever busy with dissections, mathematical studies, and the contrivance of sundry ingenious mechanical inventions. He also found time to translate into Latin Dr. Oughtred's tract on geometrical dialing. Doubtless the added impetus to scientific investigation derived from association with Scarborough, and the opportunities of frequent intercourse with men of distinguished attainments did much to open the way for the part Wren was later to play in founding the Royal Society and winning renown as one of the greatest mathematicians of his age.

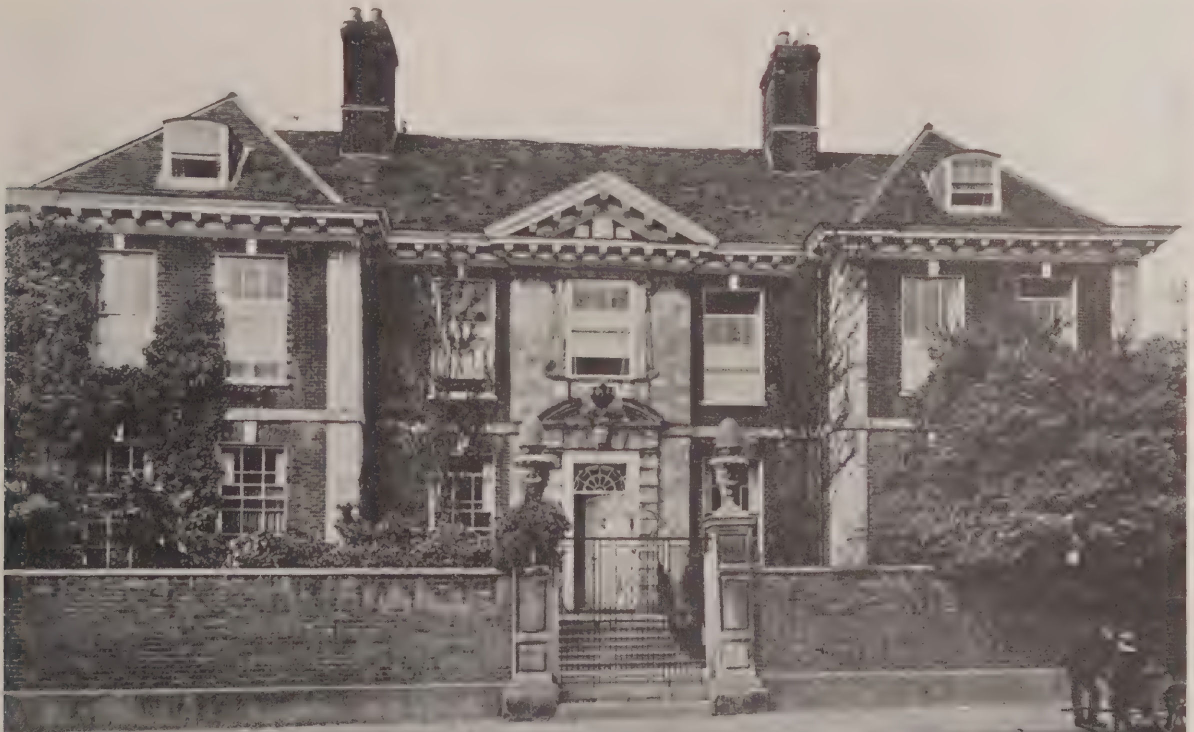


Courtesy of Messrs. B. T. Batsford, Ltd.

"Dodo House," Chichester (1684)

In 1649–1650 Wren was entered as gentleman-commoner at Wadham College, Oxford. In due course of time he was made fellow of All Souls'. In July, 1654, Evelyn, then on a visit to Oxford, records in his diary that he "visited that miracle of a youth Mr. Christopher Wren, nephew of the Bishop of Ely," and from this time dates the beginning of that intimate friendship that was to prove momentous not only to Wren's fortunes but to the future of England's architecture. In 1657 Wren became professor of astronomy at Gresham College, London, a post he resigned in 1661 for the Savillian chair of astronomy at Oxford.

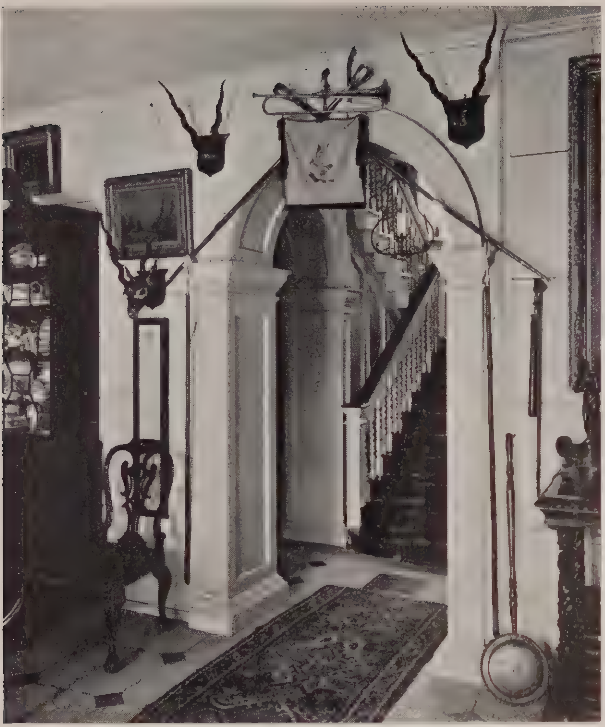
1662 was the turning point of Wren's career.



Courtesy of Messrs. B. T. Batsford, Ltd.

House in West Street, Chichester (1684)

Sir Christopher Wren, Architect

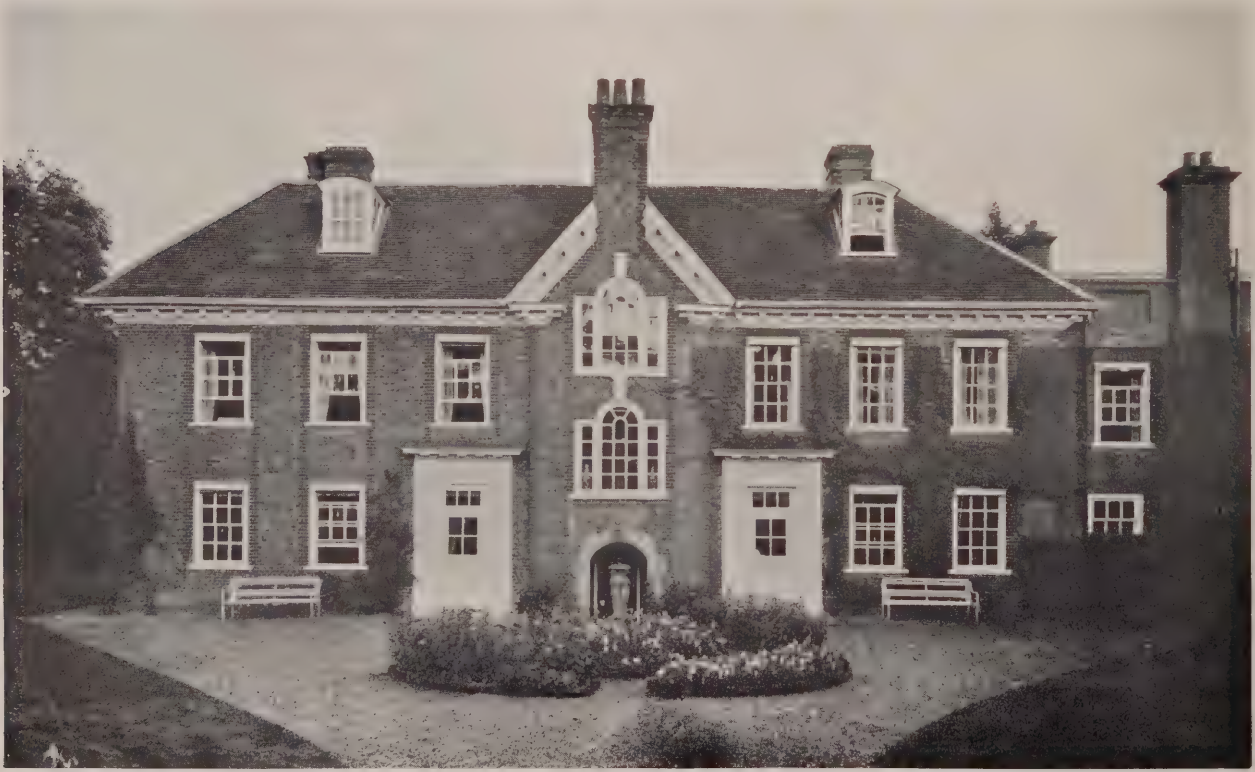


Hall and Staircase, Aspley House, Bedfordshire

Charles II, determined to enlist the services of so able a person, created for him the office of assistant to the surveyor-general, with succession to the full surveyorship upon the retirement or death of Sir John Denham, who had succeeded Inigo Jones in that post. Thus "Christopher Wren, Doctor in Medicine, Saville Professor of Astronomy in our University of Oxford," as he is described in the charter of the Royal Society, by royal warrant was set in the very forefront of the architectural profession. Evelyn's influence and advice, it would appear, were in large measure to account for the king's decision to place in so responsible a position one hitherto wholly unknown as an architect. How amply the event justified Evelyn's confidence and the king's decision, we all know. The story of Wren's subsequent architectural and personal career is admirably told in Miss Milman's "Life," wherein the reader will find a wealth of illuminating detail. We shall leave him, therefore, to peruse that story for himself while we pass on to a brief review of Wren's domestic architecture.

In only a very few instances is there *documentary* evidence to attest beyond all question Wren's authorship of houses; in a few other instances attribution rests upon long standing tradition which, all things taken into account, including internal evidence, appears plausible enough to accept in lieu of more explicit written testimony. Even then, all told, the list is short for reasons already mentioned. Any one of the houses in question would furnish material for an extended analysis, so we must perforce content ourselves at this time with a general consideration of the qualities they display.

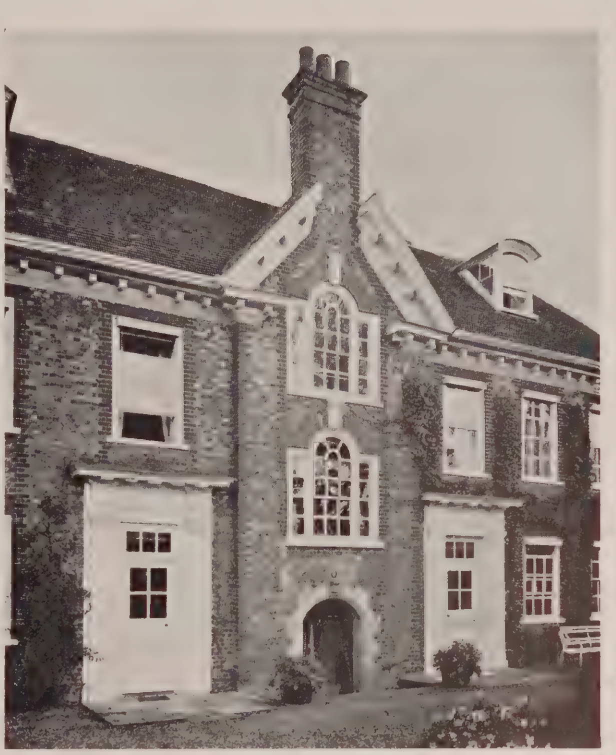
Coventry Patmore's dictum that "Sir Christopher

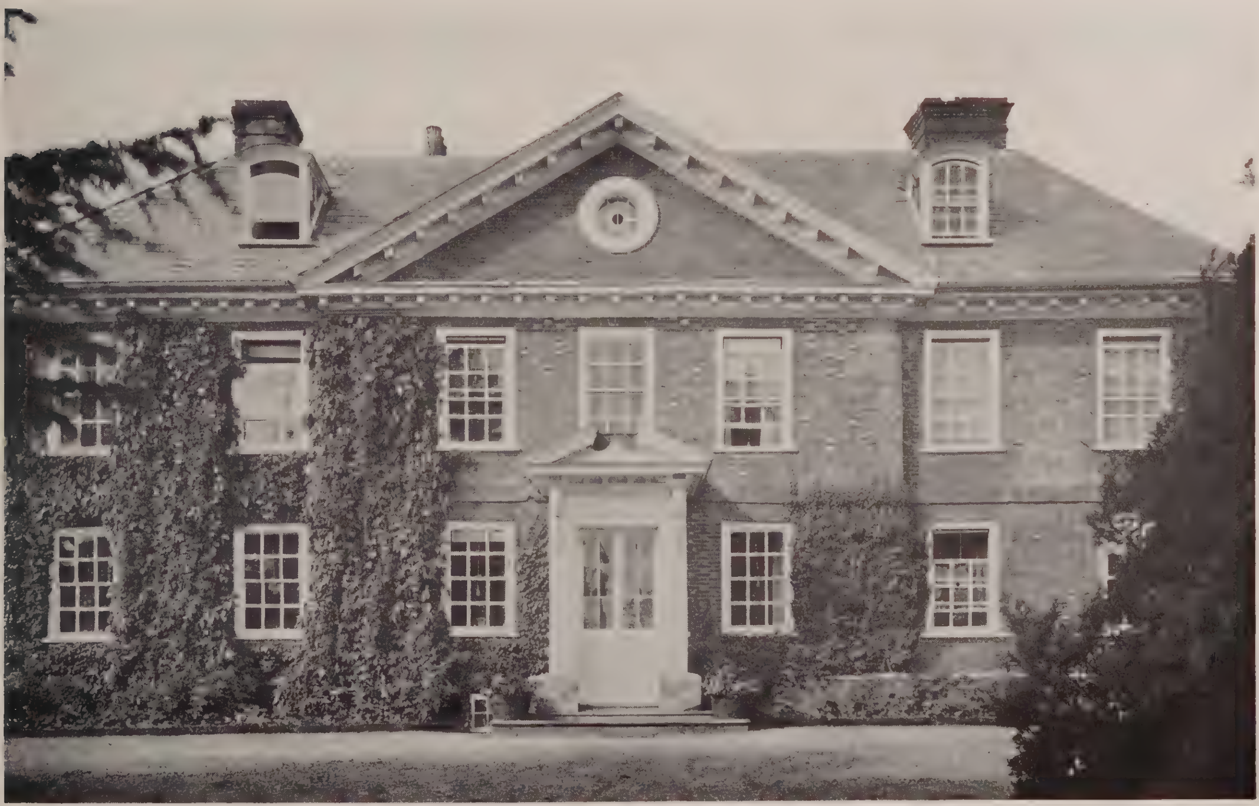


Garden Front, Aspley House, Aspley Guise, Bedfordshire, *circa* 1695
Sir Christopher Wren, Architect

Wren could not build a common brick house without imposing his own character upon it" applies not only to everything Wren did, but in a very special way puts the gist of the whole matter into a nutshell with reference to the few houses he did design. Had Wren had the leisure to design more dwellings, doubtless every one would have borne witness to the truth of which he was so sincerely convinced—that designing in the classic manner, no matter what the subject, need never be dull nor perfunctory though conforming to all the restraints by which classic composition is hedged round about. For Wren's fertile brain, the very existence of limitations stimulated a fruitful and active invention. Imbued as he was with a love of order, balance, spacious symmetry, and common sense combined with elegant dignity, he never allowed himself to be carried away by fallacious enthusiasms nor to be beguiled by picturesque whimsicalities and mannerisms. In fact, the "picturesque" in architecture made no appeal to him. But his insistence upon a disciplined classic expression in all his work did not prevent his natural geniality from manifesting itself in divers and always interesting ways. His temperament, if restrained and carefully ordered, was also vigorously human and instinct with wholesome joy in urbanity and graceful forms, and this side of his character also showed itself abundantly in all his creations.

Wren thought for himself. Just how far he was affected by Vingboon's book and the Dutch influence, or just how much he owed to his visit to France and a short acquaintance with Bernini, who was in Paris at the same time, it would be difficult to say. Nor does it matter. Whatever Wren absorbed from other sources he so thoroughly digested that whatever he gave forth was unmistakably moulded

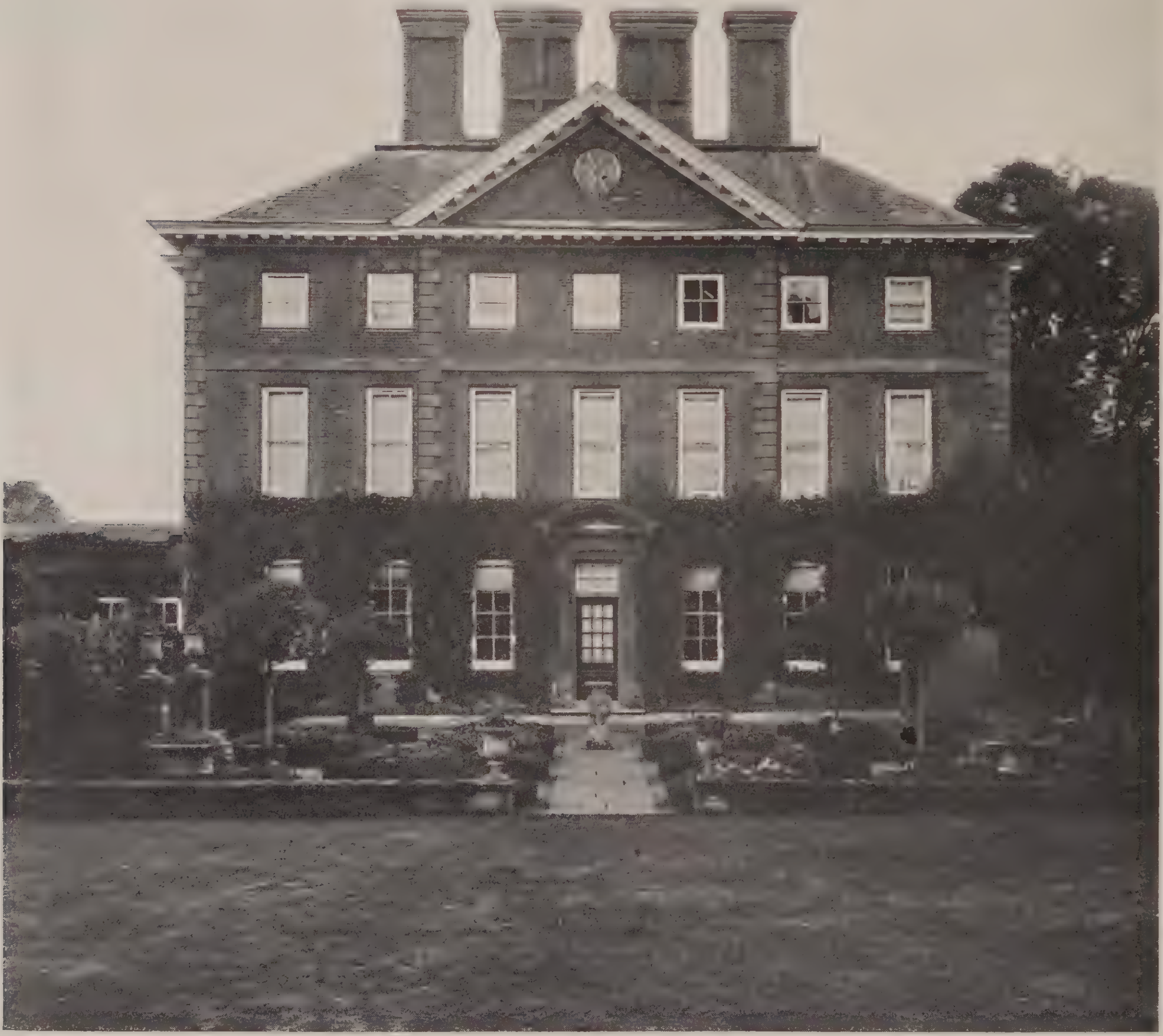

Detail of Aspley House
Rubbed brick lintels and arches and red brick flush quoins relieving dark bluish gray wall


Entrance Front, Aspley House, Aspley Guise, Bedfordshire
Sir Christopher Wren, Architect

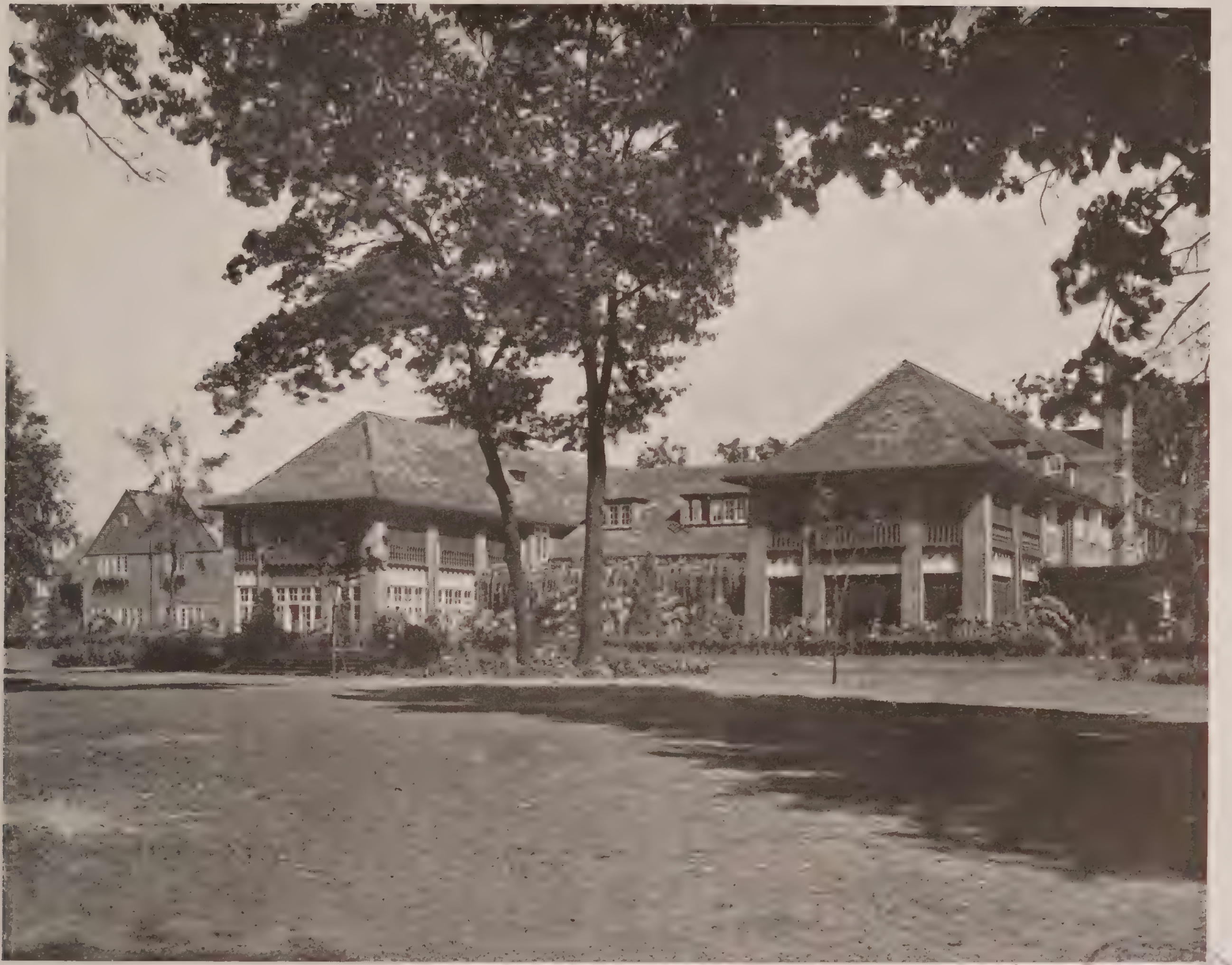
by his own sturdy originality. As it was his aim to build for all time, so on principle he eschewed all features of ephemeral appeal. He was never afraid of being dull, if restraint and repose should chance to bring that charge. But he never *was* dull.

In accepting the discipline of classicism he had exactly the same "properties" to work with as all others working in the same mode, and he could have been dull and pedantic if it had been in him. On the contrary, in a perfectly legitimate manner he invested his houses no less than his larger edifices with the charm of coupled suavity and vigor, so contrived the balance and interest of his compositions, so disposed the play of light and shadow, and made such adroit use of color and material, that the ensuing distinction proclaims the hand of a master. To mention only a few instances, Winslow Hall, "Dodo House," and the house in West street in Chichester witness the variety in composition his imagination could always be trusted to compass, while in Apsley House may be seen an engaging management of color and material.

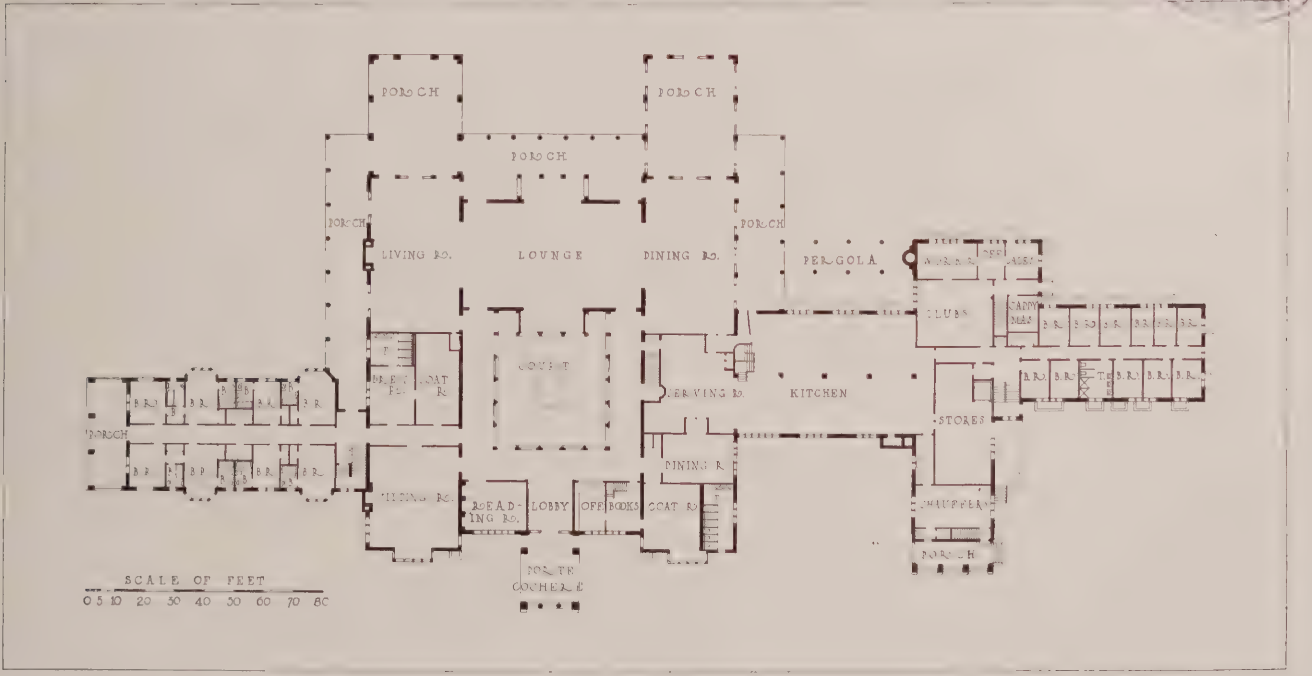
These qualities endued Wren's work with a permanent value which, if not always so quickly apprehended by an untrained eye as more sensational manifestations, never fails ultimately to carry satisfying conviction. No better tribute to this quiet staying force of Wren's genius can be quoted than what Carlyle once said of Chelsea Hospital—"I had passed it almost daily for many years without thinking much about it, and one day I began to reflect that it had always been a pleasure to me to see it, and I looked at it more attentively and saw that it was quiet and dignified, the work of a *gentleman*."



Garden Front, Winslow Hall, Winslow, Bucks, *circa* 1700
Sashes and glazing have been modernized and have altered the aspect. The general
lines of the composition, however, are characteristic
Sir Christopher Wren, Architect



VIEW OF SIDE TOWARD LINKS

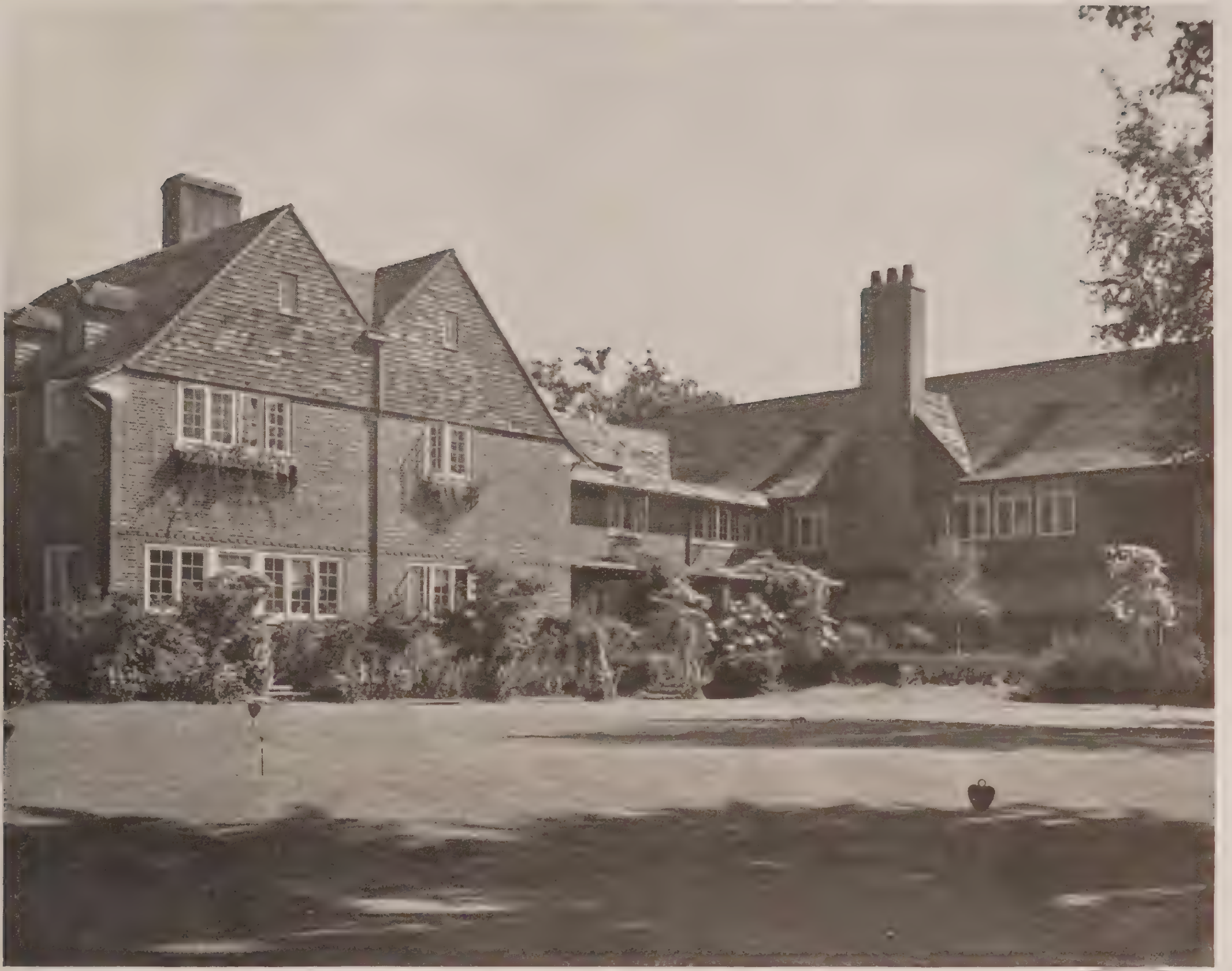


Photos by John Wallace Gillies

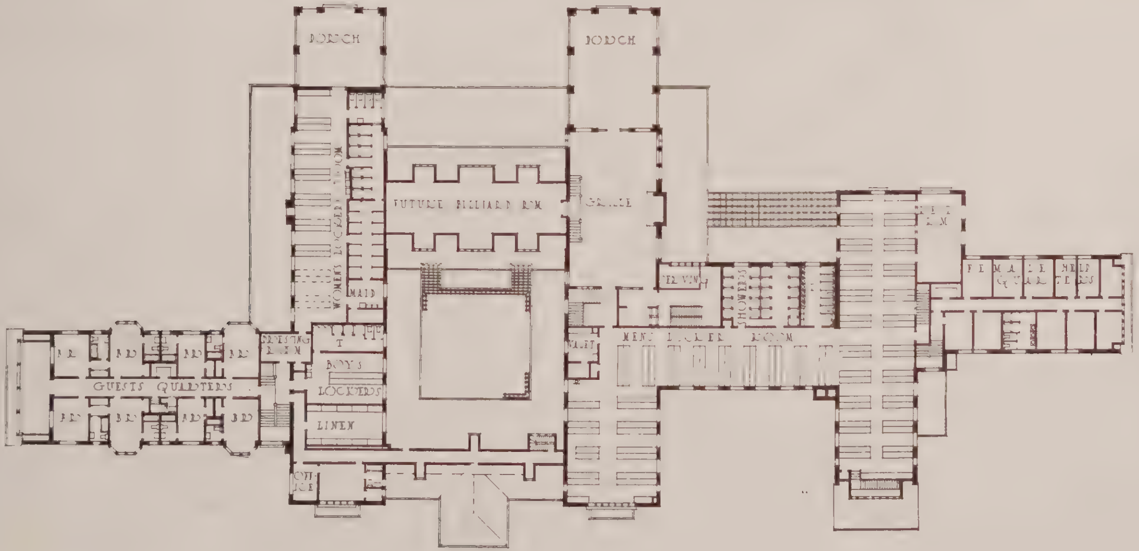
FIRST FLOOR PLAN

DETROIT GOLF CLUB, DETROIT

ALBERT KAHN, ARCHITECT



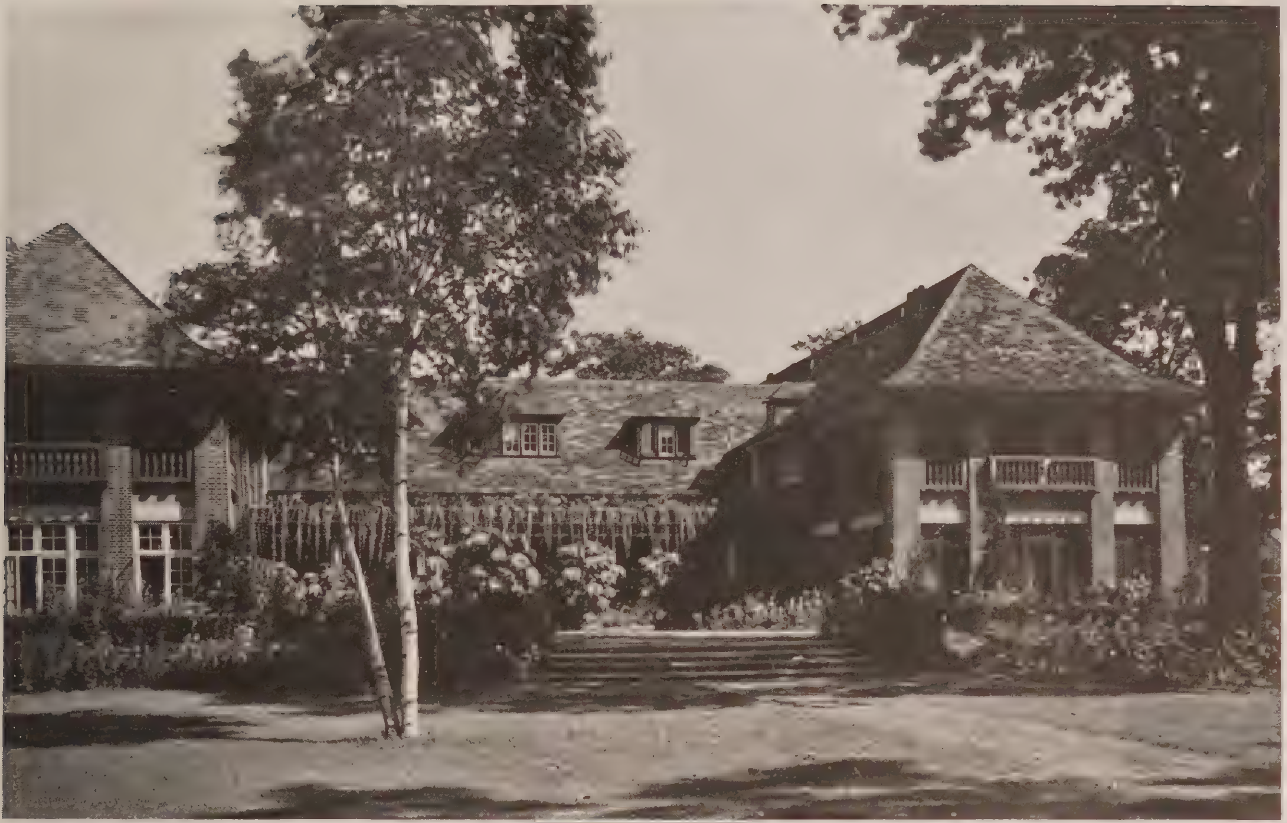
LINKS FACADE LOOKING TOWARD SERVICE WING



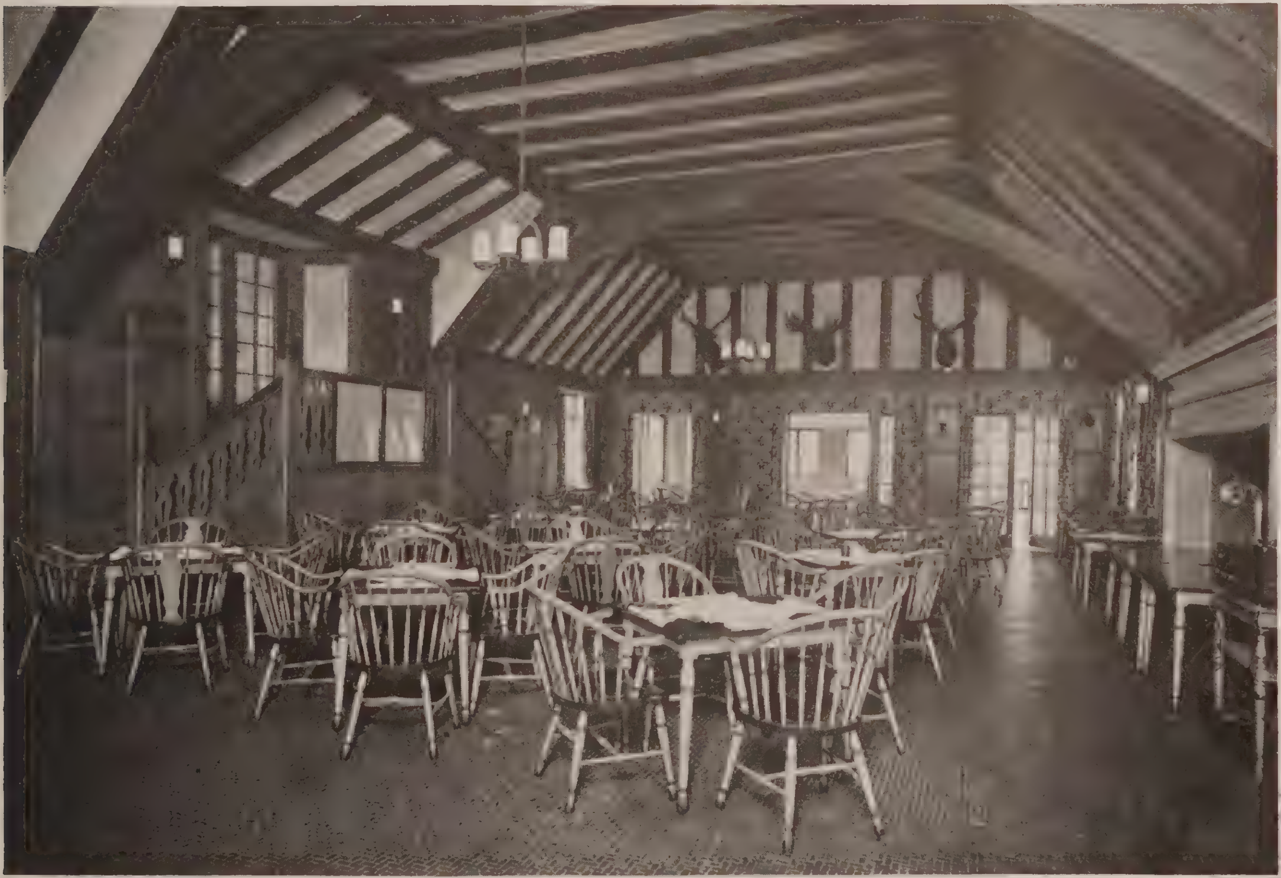
SECOND FLOOR PLAN

DETROIT GOLF CLUB, DETROIT

ALBERT KAHN, ARCHITECT



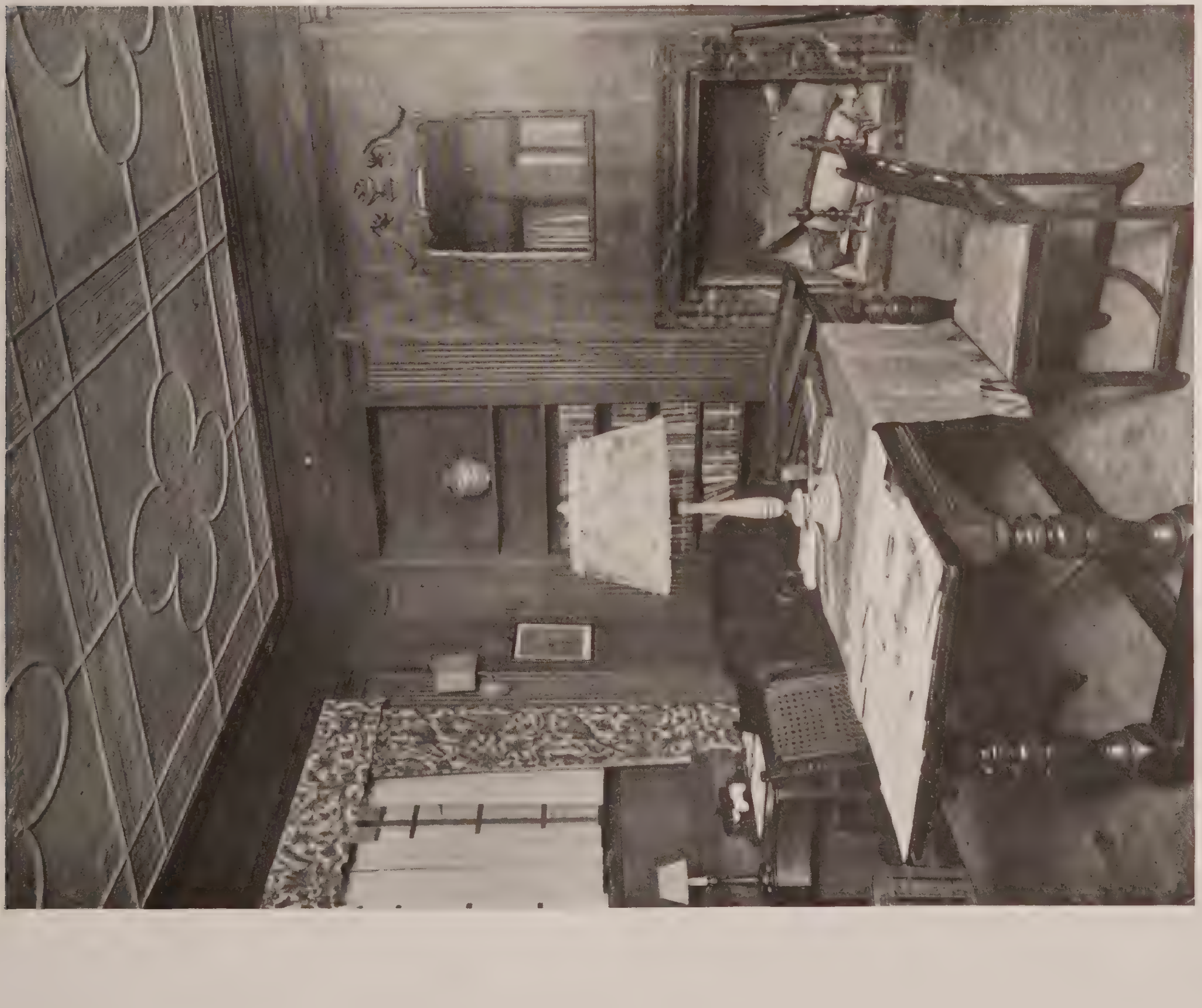
DETAIL OF PORCHES



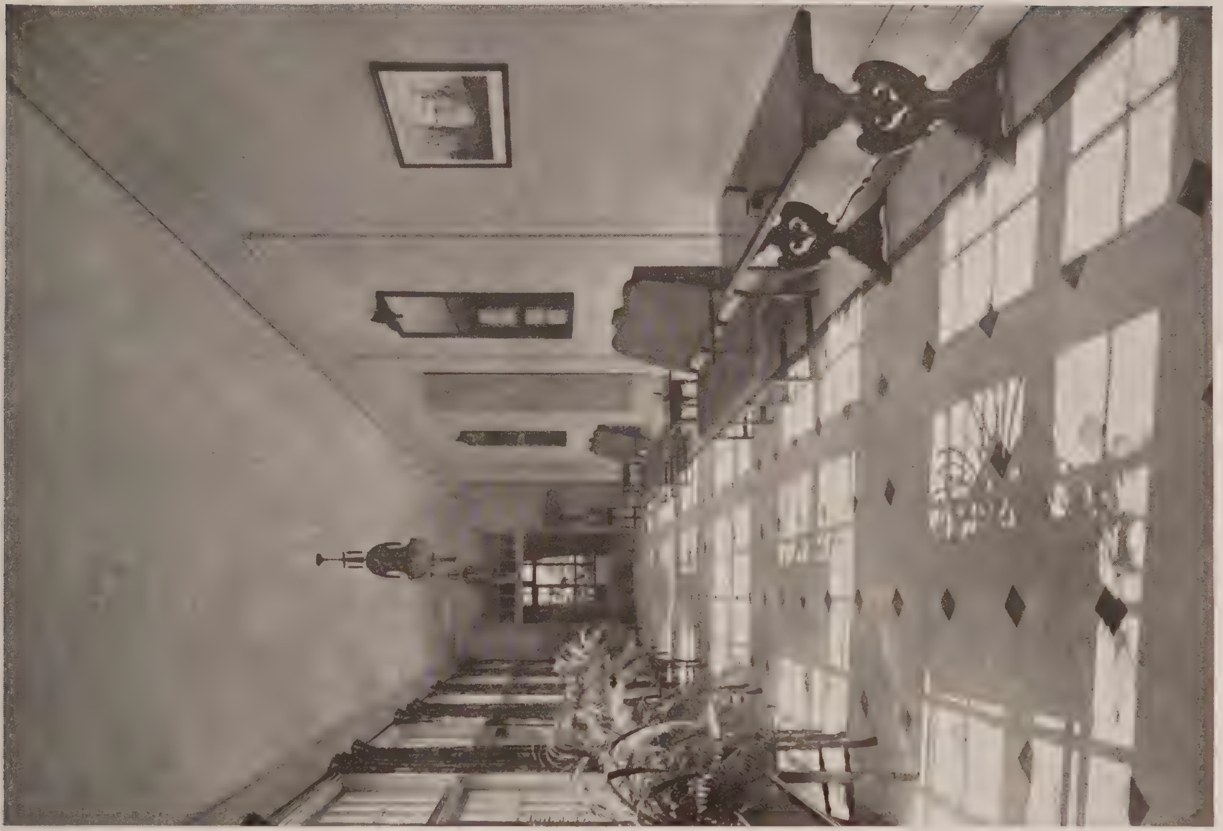
GRILL ROOM ON SECOND FLOOR

DETROIT GOLF CLUB, DETROIT

ALBERT KAHN, ARCHITECT



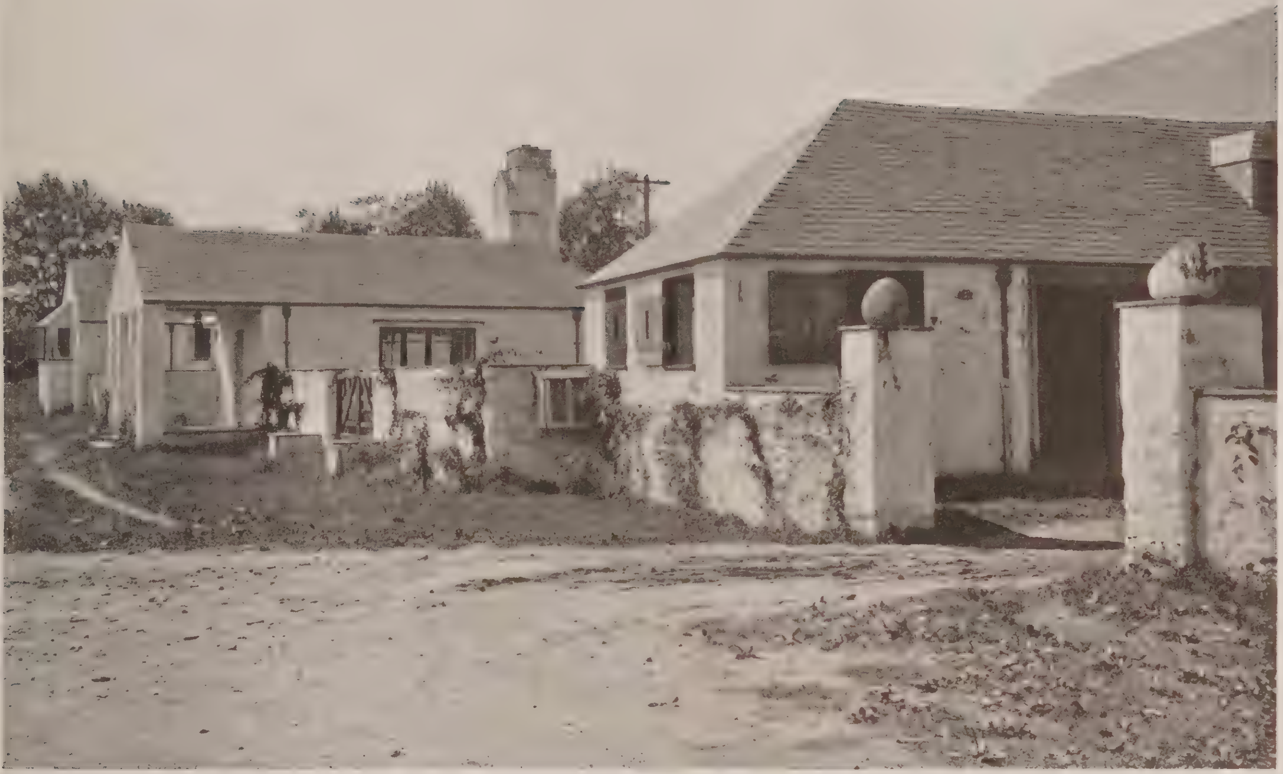
READING ROOM



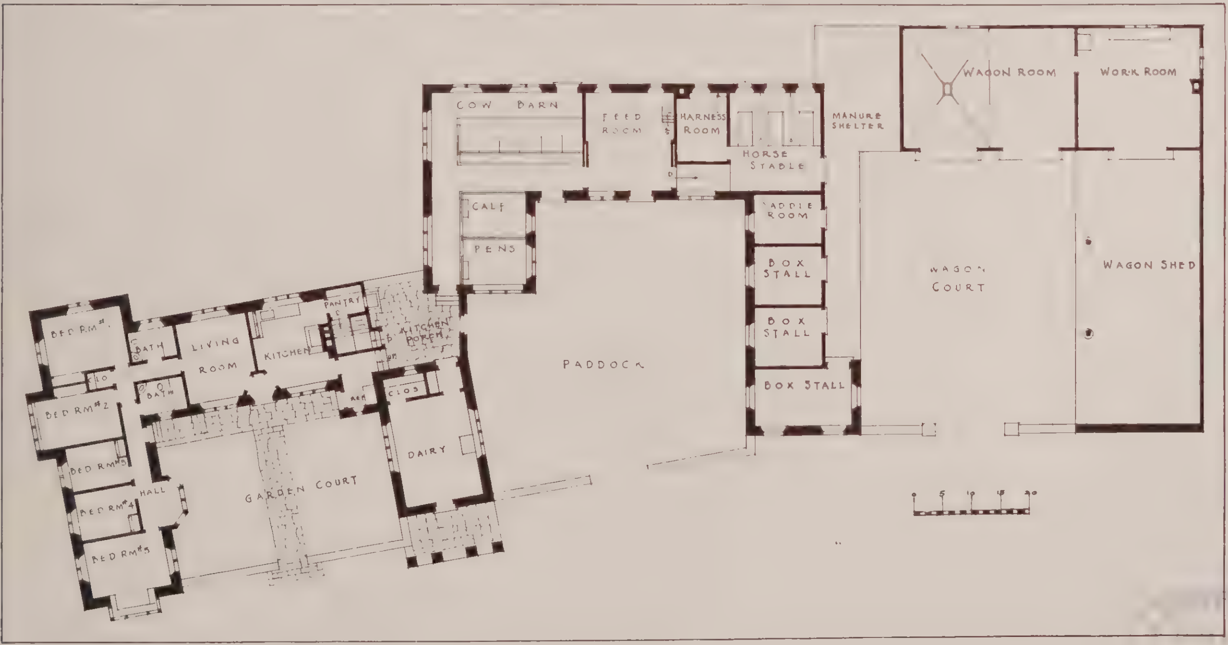
COURT CORRIDOR

DETROIT GOLF CLUB, DETROIT

ALBERT KAHN, ARCHITECT



GENERAL VIEW OF ENTRANCE FRONT

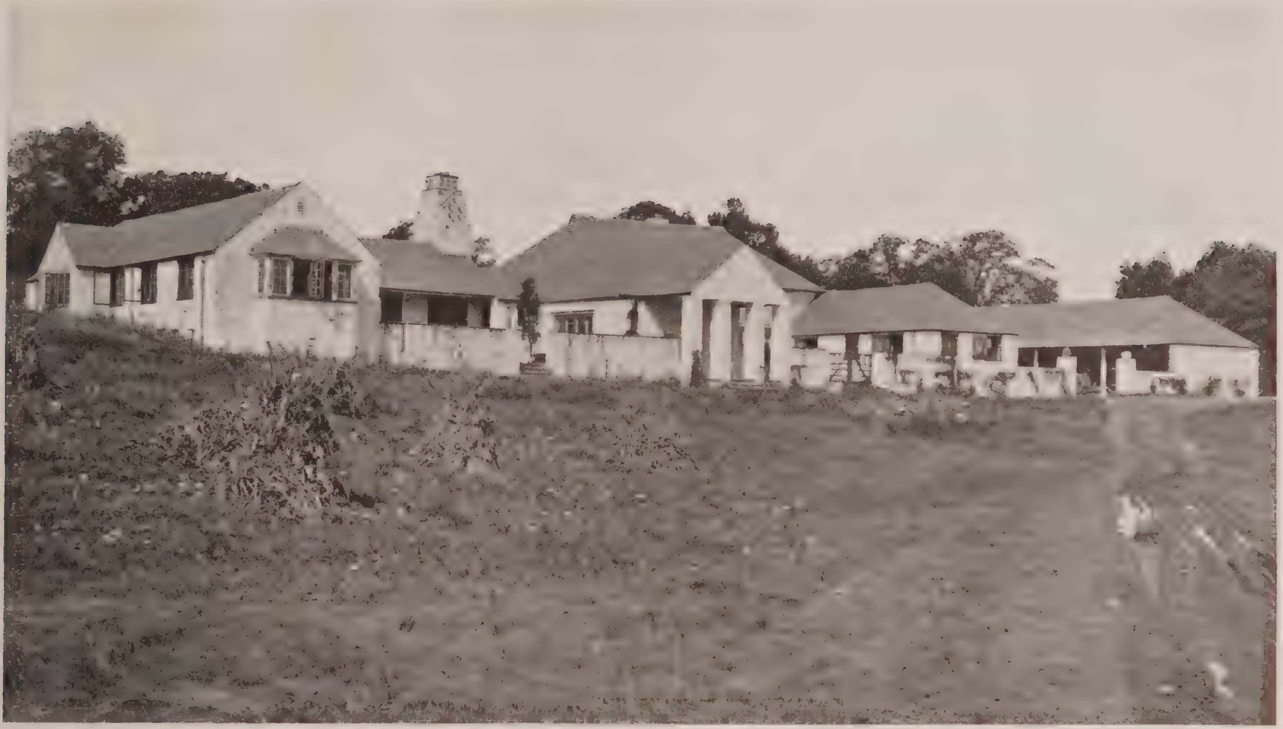


Photos by Tebbs Architectural Photographic Co.

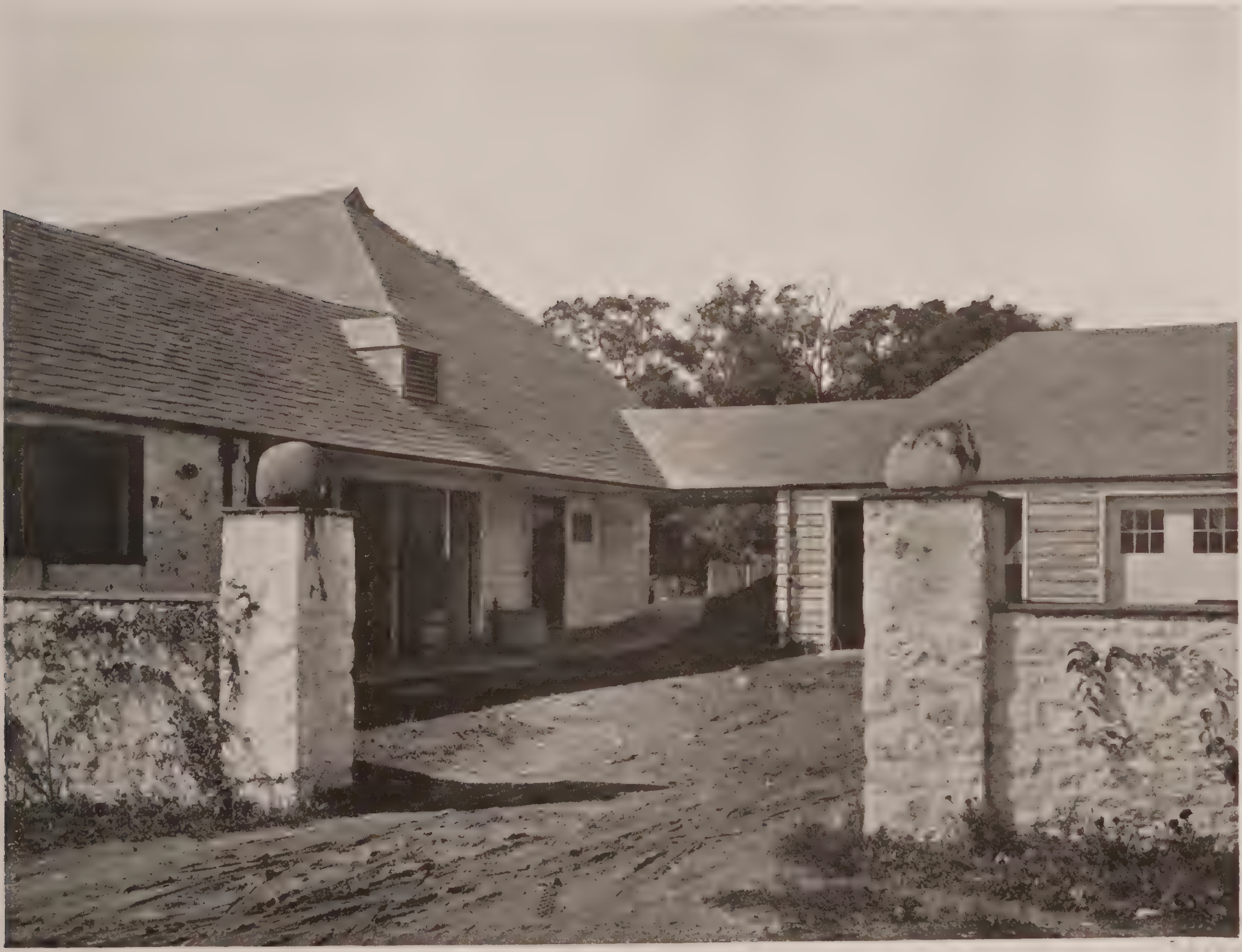
FIRST FLOOR PLAN

FARM BUILDINGS OF WALTER DOUGLAS, ESQ., DOBBS FERRY, N. Y.

ALFRED HOPKINS, ARCHITECT



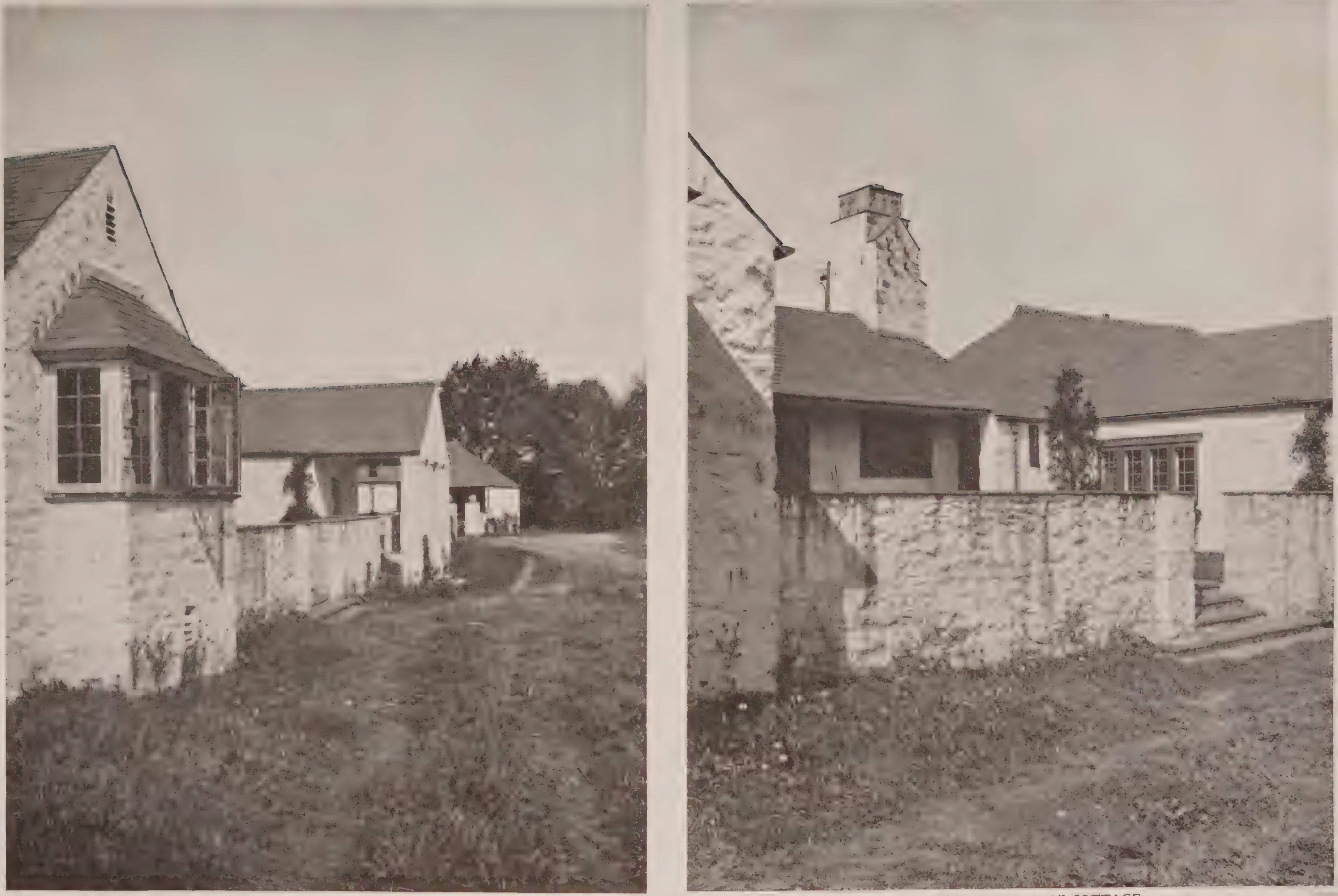
GENERAL VIEW FROM SUPERINTENDENT'S COTTAGE



VIEW LOOKING INTO WAGON COURT

FARM BUILDINGS OF WALTER DOUGLAS, ESQ., DOBBS FERRY, N. Y.

ALFRED HOPKINS, ARCHITECT

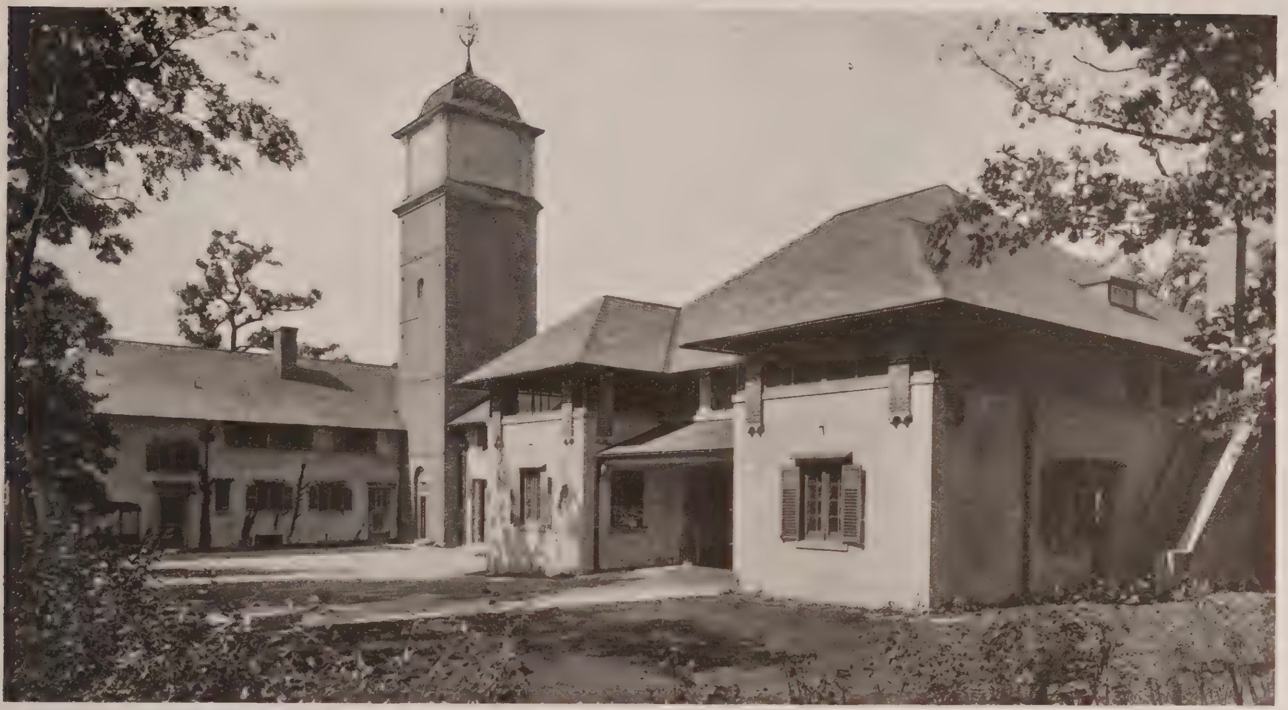


DETAIL OF SUPERINTENDENT'S COTTAGE

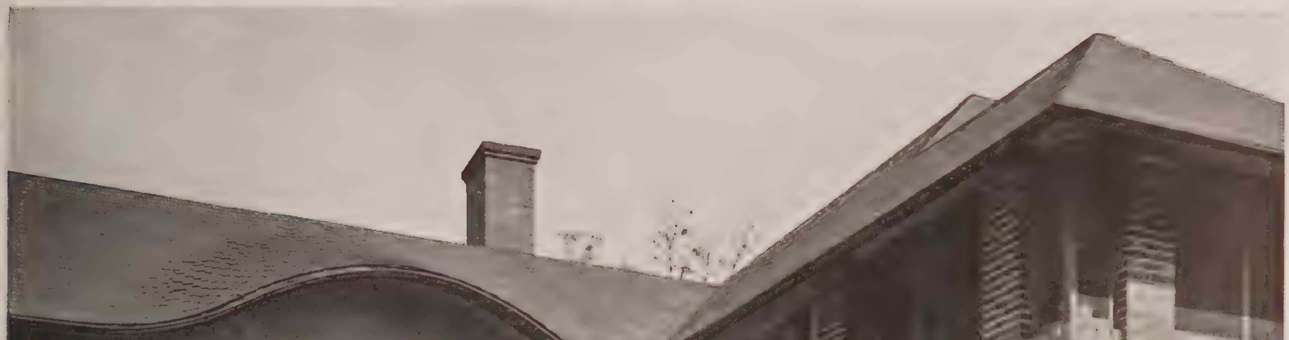
DETAIL FROM COURT OF COTTAGE

FARM BUILDINGS OF WALTER DOUGLAS, ESQ., DOBBS FERRY, N. Y.

ALFRED HOPKINS, ARCHITECT



GENERAL VIEW INTO SERVICE YARD

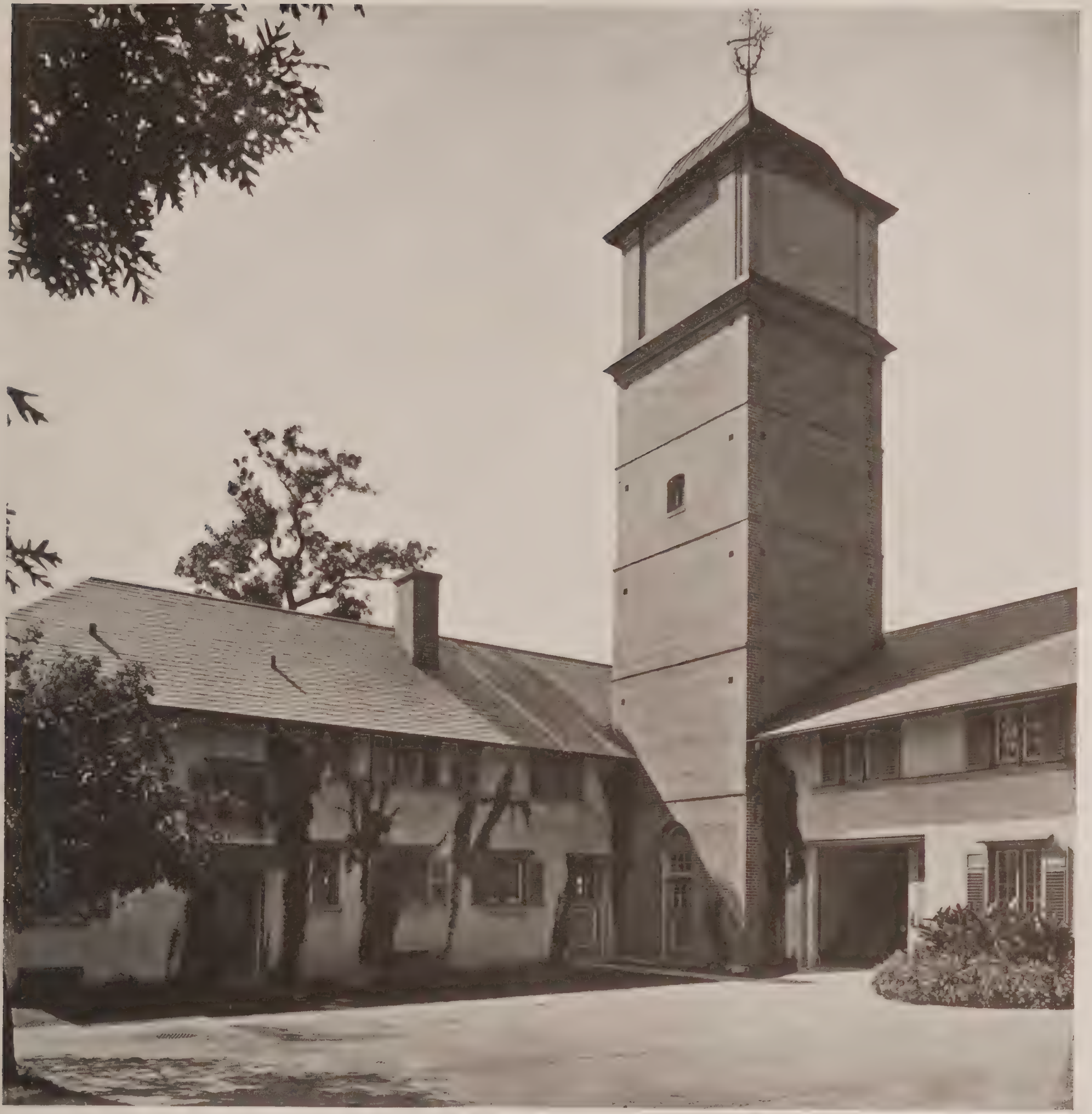


Photos by Henry Fuermann & Sons

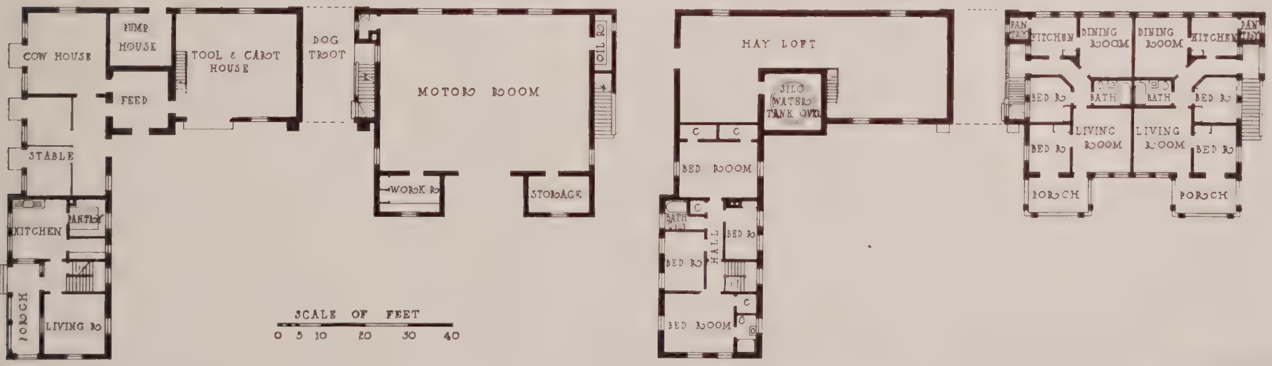
DETAIL OF ENTRANCE AND GARAGE

SERVICE BUILDING, ESTATE OF WILLIAM V. KELLEY, ESQ., LAKE FOREST, ILL.

HOWARD SHAW, ARCHITECT



DETAIL OF COURT SIDE AND SILO TOWER



SERVICE BUILDING, ESTATE OF WILLIAM V. KELLEY, ESQ., LAKE FOREST, ILL.

HOWARD SHAW, ARCHITECT

BUSINESS & FINANCE

C. Stanley Taylor, *Editor*

Business Factors in Architectural Practice

I. MORTGAGE FINANCING FOR MODERATE-COST DWELLINGS

THIS is the first of a series of practical discussions of business subjects interrelated with various phases of present-day architectural practice. The series will cover the more important business problems which may be involved in the contact of the architect with his clients and in the administration of his own office. Consideration will also be given the logical relations between the architect and other professional men whose services are required in a consulting capacity in connection with the development of building projects.—*Editor*

A STUDY of the developments of the past few years within the architectural profession indicates a record of progress which should be a source of pride to every practicing architect or friend of architecture in the country.

Perhaps one of the most gratifying indications of the broadening scope of architectural service may be found in the architect's growing recognition of his own importance in the economic scale. Certainly the public shows evident indications of an increasingly favorable comprehension of this position which is due not alone to artistic skill and the advancement of structural knowledge demonstrated under the architects' control of thousands of new building projects which are being developed annually. This strengthened position of the profession may be attributed in a large measure to the growth of a broader interest on the part of the architect in assisting his client toward the solution of business problems arising in connection with individual building projects. These problems may be of a financial nature, including a careful analysis of investment features, or as in the case of industrial buildings, automotive buildings, stores and similar structural types, a study of the business to be carried on within the building which is absolutely necessary if the structure is to be developed as an efficient machine for its purpose.

Today it will be found that the average successful architect is a good business man with a fundamental knowledge of business practice and of economics. He is in a position to interpret the problems of his clients not only in terms of line and proportion but in terms of structural efficiency and of dollars and cents. There are those who would belittle this important phase of architectural service—who fear that the architect is departing from his true function when he spends time away from the drafting board in order to talk to bankers on behalf of the interests of his client. There are also many who without denying that this is an age of specialization decry the development of specialized practice on the part of an architect.

The fact is that in the average successful architectural office today we find a thorough appreciation of the need for trained business minds in order that the influence of the architect and his advice and service may apply to a building project from its embryonic stages. We find also in certain offices that a vast fund of specialized knowledge has been built up around special building types such as theaters, hospitals, schools and other general classes. The result of this condition is the establishment by the architect of an almost autocratic control of the building plans, materials and equipment. The service which it is possible for such architectural offices to render is highly gratifying to the client (although not always fully appreciated until a later period) and contributes strongly to establishing the architectural profession in a better position before the eyes of the building public. The reverse of this condition is also true. There are many architects who are excellent designers and who may be possessed of valuable knowledge in regard to the actual construction of buildings, but many of these are finding that because of their inability to appreciate the business problems of the client, commissions which might otherwise have been theirs are unrealized. Often such proposed work goes ultimately to another office where a broader type of service to the client has been made possible through a more businesslike appreciation of the problems involved in building requirements.

In present-day architectural practice it is very difficult indeed to draw a line at the point where business knowledge may overshadow artistic appreciation. It is not at all difficult to point out many instances where practicability and fine architecture have clashed, to the detriment of both elements. In the light of practical experience, and avoiding further reference to the fundamental controversy between art and business, it is quite certain that the more an architect may know about general business practice in relation to any building project, the more satisfactory his services will prove to the client. With these facts in mind, the present series of articles covering business factors in architectural practice is presented. We shall endeavor to provide information for reference purposes which will be of assistance to the architect at a time when he may be confronted by a business problem or one involving the employment of outside professional service.

The present article, which is the first of this series, relates to the mortgage financing of moderate-cost dwellings, a subject which should be of interest to many architects in view of the large number of such building operations projected for 1923. This article will be followed by a supplementary article on the mortgage financing of apartment buildings and hotels, also a subject of considerable interest.

AN interesting survey was recently made by the Research Department of THE FORUM covering the offices of a number of architects to determine the extent of moderate-cost dwelling construction under planning for the year beginning with the spring building season of 1923. It was found that in many of these offices plans had been prepared months ago for prospective house owners, but that actual construction had been held up because of the inability to finance.

Often this condition had been due to the fact that a client had underestimated the cost of the dwelling and was not prepared at the time to finance even the required equity. In many other instances it had seemed difficult to get mortgage money, and a careful examination of a few cases soon demonstrated that a substantial proportion of these projects might have been financed if all available channels for obtaining mortgage loans on this class of property had been tried.

Possibly it does not lie within the functions of the architect to act as a financial adviser to his client, but unquestionably many architects have greatly enlarged their own practices by a study of the mortgage market and by rendering direct assistance to enable the client to place himself in a financial position to begin construction. The architect is placed logically in a position to render a twofold service to a prospective home owner, entirely aside from that of architectural design and supervision; first, he may prepare plans and specifications in proper form for presentation in connection with a building and permanent mortgage loan application, and, second, by familiarizing himself with the mortgage market he may often be in a position to assist the client in arranging such loans.

There is, of course, a tendency on the part of the prospective builder of a moderate-cost dwelling to take advantage of available stock plans and the obvious service of building contractors, who in many instances advise against the employment of an architect; it will be noted, however, that the architect who has really developed a broader form of service to clients in this field is almost constantly busy. He not only assists in financing but often passes judgment on the selection of land; he strives to eliminate waste in construction cost and to direct the purchasing of materials and equipment in a manner which provides economy without too great a sacrifice of quality. In rendering a service of this nature, together with close supervision of the work of contractors, he justifies a commission sufficiently large to represent a profit to himself.

In the mortgage financing of moderate-cost dwellings the primary consideration is that of the first mortgage which will normally include the provision of a building loan payable at agreed stages of progress in the construction of the building. After the building is completed the final payment is made, and the mortgage is established on a permanent basis either for a definite period of years, at which time the entire principal becomes due, or in amortization form such as that of the average building and loan association, in which case the client pays a monthly amount covering interest and reduction of principal. We have therefore for consideration these two types of mortgages—the permanent or first mortgage and the amortization mortgage.

In providing the ordinary form of first mortgage it is usual to loan from 50 to 60 per cent of the appraised value of the land and building. This loan is for a period of 3 or 5 years, bearing interest at 5 or 6 per cent per annum and payable in full at the end of the period. If the mortgage is obtained from a bank or a well established loaning institution it is not usually called in at the expiration of the period, but a renewal is granted unless conditions require a reduction in the amount, or full payment. In applying for a first mortgage loan it is necessary that the land on which the house is to be built shall be free and clear of mortgages or liens of any nature. Often in purchasing land for home building an agreement is made with the seller of the land to take back part of the price in the form of a second mortgage on the completed house and land. In any event, the way must be left clear for the first mortgage loan to be established as a prior lien or claim for the protection of the mortgagee. The usual sources from which such mortgage loans are obtained are classified in these descriptive paragraphs:

1. *Savings Banks*, which are not allowed by law to loan more than 60 per cent of the valuation of the property. The savings bank is an excellent institution from which to obtain a loan, as the cost of arranging it is very low, usually not exceeding one-half of 1 per cent, and the mortgage can usually run undisturbed for many years, since the savings bank policy is one of renewal.

2. *Title Insurance or Trust Companies*, in districts where such organizations operate, are usually good institutions from which to obtain loans for home building. Experience shows that title companies will usually appraise property at slightly higher valuations than will savings banks, and consequently will at times make more liberal loans. The usual policy of the title company is to make a loan at 5 per cent, and the aggregate loaning activity is financed by selling these mortgages on a guaranteed income basis of 4½ per cent to the average investor, thus refinancing the company's activities. A mortgage loan from a title or trust company is usually certain to remain undisturbed for many years.

3. *Insurance Companies*, particularly fire and life insurance, usually have large reserve funds which are available for mortgage loans under banking

supervision. The procedure in the case of obtaining a loan from such a company is similar to that of securing a loan from a savings bank, title or trust company.

4. *Attorneys.* Perhaps the most general source of obtaining loans for modest building operations is through attorneys. Usually this is done directly through the attorney for the owner who may have handled his land purchasing operations. Such attorneys have from time to time sums of money placed with them for safe investment, particularly funds of estates or funds placed in trust by individuals.

5. *Private Funds.* Building and permanent mortgages are often obtained directly from private sources through personal or business acquaintances who may have money for conservative investment. In such cases the services of an attorney are usually depended upon for completing arrangements.

6. *Mortgage Brokers.* In metropolitan districts the services of mortgage brokers are very often called upon for securing loans on dwellings. Many real estate men also act as mortgage brokers. Their usual system is to keep in touch with various sources of money available for loans of this type. Immediately upon receiving application from the owner, the broker will go into the market to "place" the mortgage, and for his services is paid a commission, usually varying from 1 to 2 per cent. In placing the average mortgage there is a percentage charged to cover cost of the operation which may include cost of filing and recording, attorney's fee, broker's commission and other costs which may be incurred. When placing the mortgage through a broker the client is usually told that it will cost him 2 or 2½ per cent. This means that from the principal of the mortgage paid to the client or owner the indicated percentage will be deducted, out of which various expenses and broker's commission are met.

It is evident that in placing a conservative mortgage on a dwelling there are so many sources which are directly available to the house owner that it is not a wise proceeding to enlist the services of a mortgage broker unless the owner is willing to pay the necessary fees to have this work done for him. It is bad policy to interest more than one broker in obtaining a mortgage loan at one time. A better method is to give a broker what is known as "an exclusive authorization" to obtain the loan; otherwise, if more than one broker is visiting various mortgage sources, the owner's application becomes somewhat discredited.

Another plan of financing a building operation is known as the first and second mortgage method and is customary when the owner has not enough money to finance more than from 20 to 30 per cent of the entire cost of land and building. The first mortgage, up to approximately 60 per cent, is placed in the usual manner. If the owner had originally 25 per cent of the amount of money necessary to carry out the operation, it is evident that someone must finance the difference between the cost of house and land and the total of the first mortgage of 60 per cent plus the amount of money which the owner had originally, a difference of 15 per cent. This is not an unusual condition, and there are several means of obtaining the necessary second mortgage money.

It is evident, however, that the second mortgage money is to be more expensive than that obtained on first mortgage loan. The second mortgage usually bears the brunt of any misfortune which may happen to the property. In case taxes or interest are not paid and it becomes necessary for either mortgagee to foreclose, the second mortgagee must be in a position to pay off the first mortgage and protect his own interest; otherwise, under foreclosure proceedings, his investment is in danger of being wiped out. In view of the greater risk, a second mortgage usually carries not only 6 per cent interest but requires the payment of a substantial bonus to induce the lender to take the risk involved. Here are some of the methods of financing the second mortgage:

1. In many cases the builder is willing to take a second mortgage as payment for his services. In this manner he receives liberal payment, and his usual method is to discount the second mortgage by selling it at a substantial reduction in price.

2. Attorneys often have clients' funds available for second mortgage money.

3. There are regular second mortgage institutions which will make the necessary loan on the payment of a bonus which may vary from 5 to 15 per cent of the principal involved, depending on the location of the property, the availability of second mortgage money in that district, and by the amount of second mortgage required. Consideration is also given to the amount of the first mortgage loan. If this is low, the second mortgage money is usually less expensive.

It must be realized that when a house is built under first and second mortgages the owner is dangerously close to the "shoestring" type of financing. Usually a second mortgage loan has an expiration period equal to the first mortgage, but at this point it differs from the first mortgage in that payment is usually demanded, or at least a substantial reduction of the principal, at the time the second mortgage falls due. Savings banks, title companies and other sound financial institutions do not deal in second mortgages, and consequently this business is often left to a less dependable class of business men. While many sources of second mortgage money are dependable and honorable in their business dealings, there exists, unfortunately, a class of second mortgage dealers known as "second mortgage sharks." Their policy is to make a second mortgage loan, charging as great a bonus as it will bear, and to foreclose immediately upon the termination of the loan period unless the owner pays off the entire principal. Through this method many house owners who have overestimated their financial powers are forced out by foreclosure proceedings, and 20 or 25 per cent investments become entire losses to them.

Financing through Building and Loan Associations. As each year passes, building and loan associations assume a more important position in the field of mortgage financing. All building and loan associations operate on substantially the same basis. A building and loan association is essentially a type of savings bank, established primarily as a depository for accumulating funds in savings accounts of prospective home builders. As the building and loan association usually pays interest at 4½ to 5 per cent, it is but natural that many individuals should use such institutions for the purpose of investment without considering the future building of a house. Consequently, large sums of money are diverted through such channels into the field of mortgage financing entirely restricted to loaning on moderate-cost dwellings.

In most states building and loan associations are allowed legally to make more liberal loans, sometimes as high as 75 or 80 per cent of the appraised value of land and building, although the average loan is for not much over 60 per cent.

The procedure of borrowing from a building and loan association includes, first, the taking out of a membership and the opening of a savings account. When the client is ready to build an application is made for a building and permanent mortgage loan accompanied by a description of the land and a carefully drawn set of plans and specifications. The land is appraised and the plans and specifications are carefully examined by a competent architect who represents the association. Recommendations are then made, and the loan application passes the scrutiny of a board or committee. If the loan is passed the money is usually made available to the borrower in four payments as the building progresses, the first payment being due when the foundation is completed; the second, when the roof is ready for final covering; the third, when the brown or white plaster coat is completed, and the last payment 30 days after completion of the building. The mortgage is usually paid off at the rate of 1 per cent of its face value per month; that is, a $6,000 building and loan mortgage would be payable at the rate of $60 a month. This amount, however, includes not only amortization of the principal but interest as well. Thus to completely pay off the mortgage at this monthly rate requires approximately 11 years and 7 months.

It is quite customary to pay off on this mortgage until it has been reduced to approximately a 50 per cent valuation basis. It may then be replaced with a straight mortgage from some loaning institution. The costs of obtaining a building and loan mortgage, which must be paid by the borrower, include the cost of drawing of necessary papers, a fee for the time required to examine land and plans, the cost of title insurance or abstract work, the cost of a fire insurance policy, and other items which amount in all to approximately 3 or 4 per cent of the face value of the mortgage. In other words, preliminary costs in placing a $6,000 building and loan mortgage will be usually from $200 to $250.

Importance of Well Prepared Plans and Specifications. In applying for a mortgage loan from a building and loan association or through any other channel it is of great importance that the plans and specifications be well prepared and practicable. We have been assured by a number of building and loan association officials that they invariably loan more liberally on the work of certain architects whose work has been established favorably with them, because they are certain of the architects' ability to design a dwelling which will hold up its value in the real estate field and which will be well constructed to represent sound collateral for the loan. This is a situation in which the architect can be very helpful to a client and can justify an important element of his service if he is able to assist in mortgage financing, and particularly if he has cultivated contacts through various mortgage channels where his work is regarded favorably.

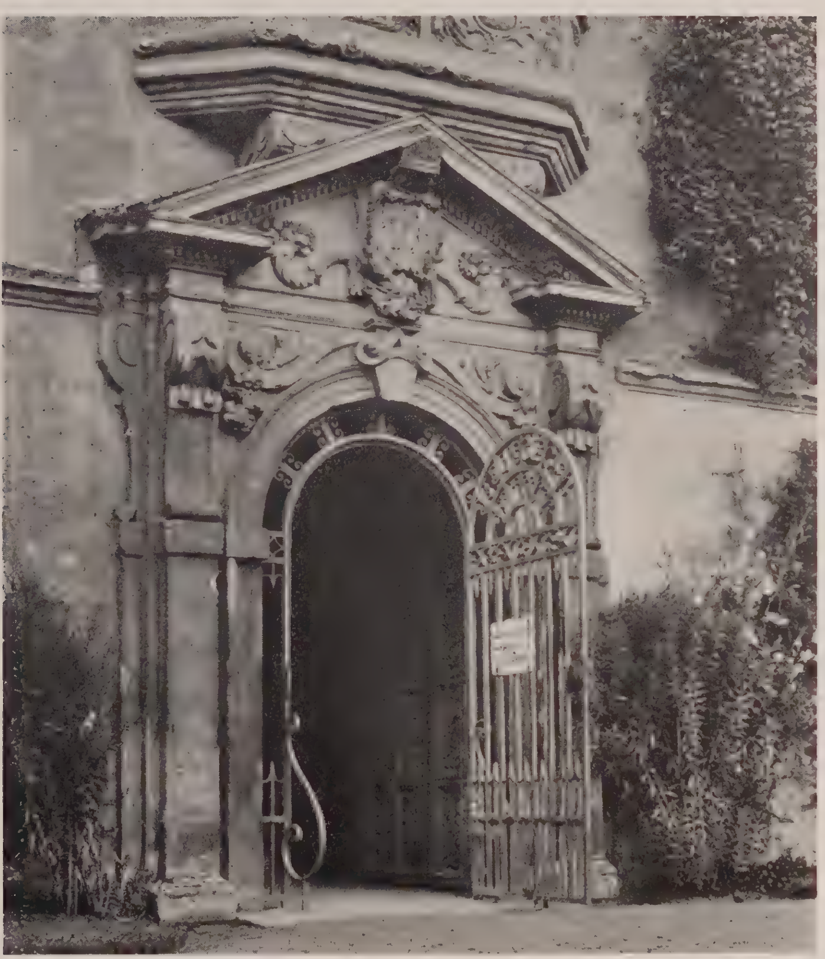
There is no field in which the architect finds it so difficult to justify his charges as in the small house field. This is not because his services are unnecessary, but because the average prospective builder of a moderate-cost dwelling feels that the services of an architect constitute a form of luxury which he cannot afford. It is, therefore, necessary to indicate to the owner the various divisions of practical service which the architect can render. Aside from better designing than usually available through stock plans or contractor's plans, such service includes practical advice in the purchasing of materials and equipment, in the placing of the general contract or subcontracts, and in careful supervision to see that the work is properly carried out. In all these branches of service there should be a definite cash saving which will offset the architect's fees and if, in addition, the architect is in the position to advise his client in regard to mortgage financing, there can be no question that much more of this moderate-cost dwelling work would fall to the part of architects. Almost invariably the client has a definite financial problem, and in many instances he needs a form of service which will help him to make up the difference between the cash he has and the balance of equity above the normal first mortgage.

Naturally, the method of mortgage financing will vary somewhat according to local conditions, but in this article we have attempted to cover in a general way every mortgage situation which might arise. The architect who will take the trouble to carefully analyze the mortgage situation in the districts in which he operates will find this a means toward a material increase in the volume of his work.

ENGLISH ARCHITECTURAL DETAILS

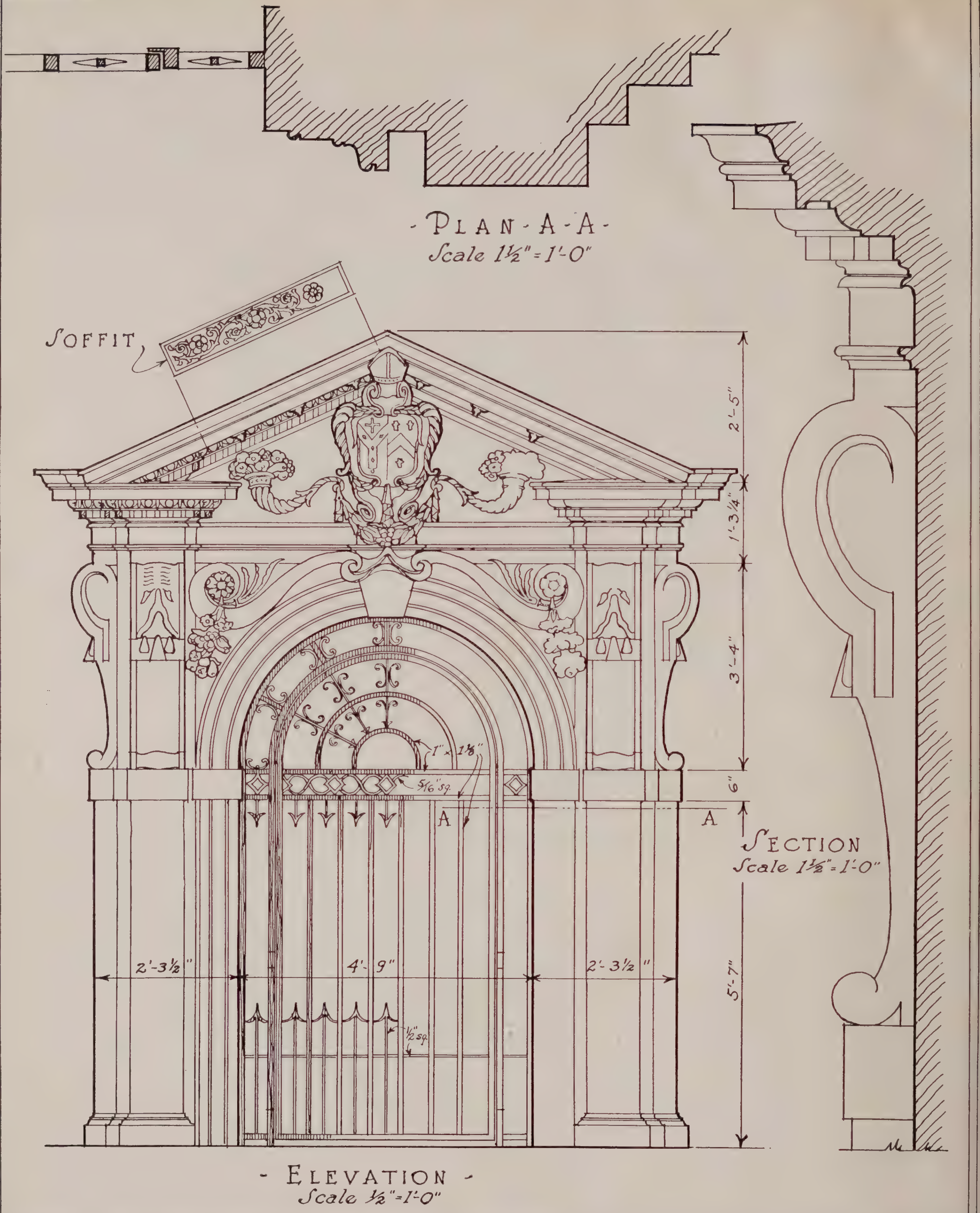
A SERIES OF MEASURED DRAWINGS

By HOWARD MOÏSE



STONE DOORWAY
ST. JOHN'S COLLEGE, OXFORD

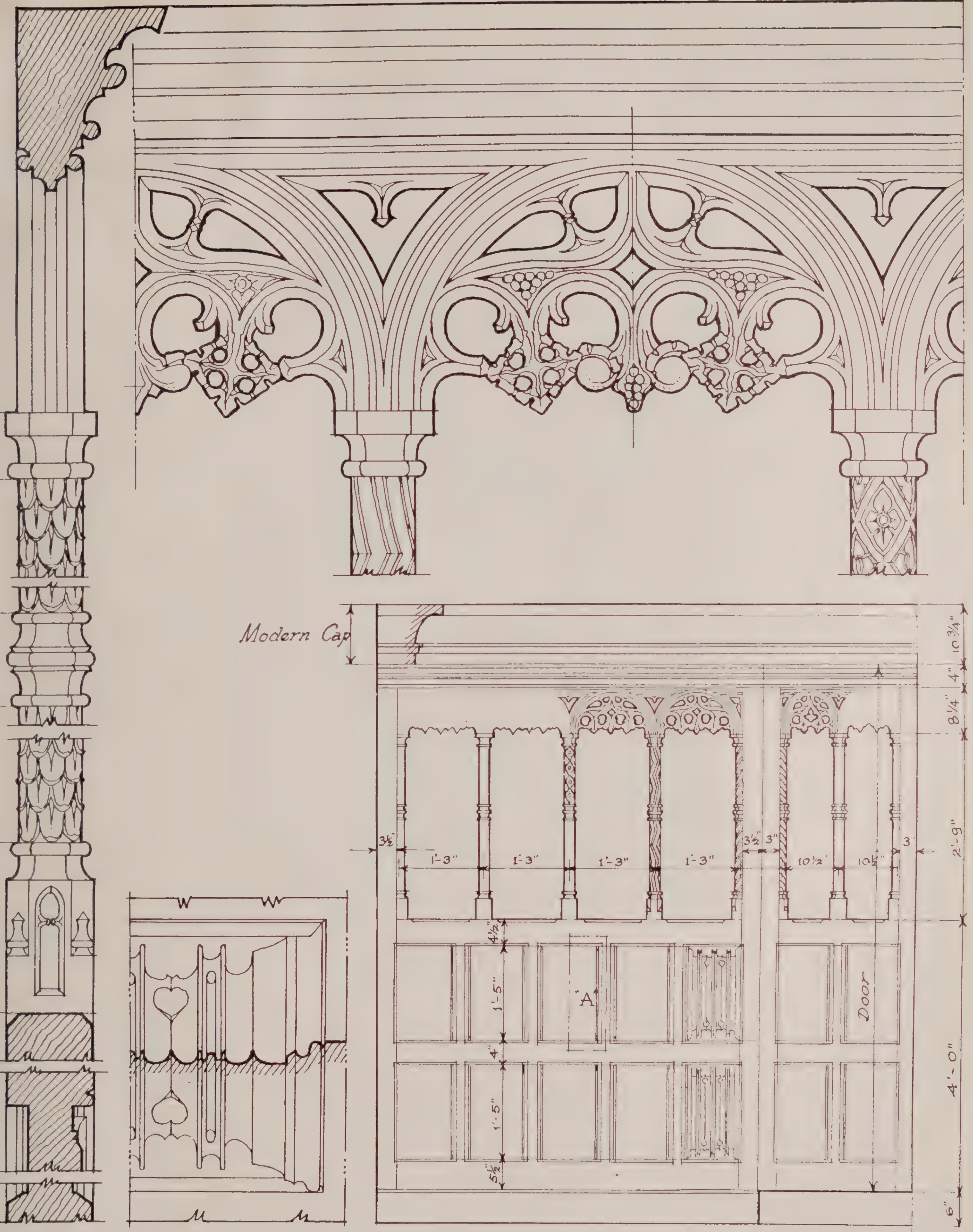
THE design of this doorway into the garden at St. John's College, Oxford, is often attributed to Inigo Jones. One writer, in 1688, tells of the new buildings at St. John's, begun by Archbishop Laud in 1631, as "fashioned in an excellent symmetry according to the exactest rules of modern architecture." Other writers have taken the position that it could hardly be Jones' work since he was steeped with Palladianism, while St. John's gives much evidence of Flemish influence. The detail is rather plain but well executed, and in certain respects it is so similar to work at Winchester known to be by Le Sueur that it may have been designed and executed by him. Just above the doorway is an oriel window the design of which, connected with that of the door, shows the use of detail even more unmistakably Flemish. The gates, made about 1695, were originally partly gilt.



ENGLISH
DETAILS
1923

- STONE - DOORWAY -
- SAINT - JOHN'S - COLLEGE - OXFORD -

MEASURED and
DRAWN by
HOWARD MOÏSE



- SECTION - DETAIL ELEV. "A" -
Scale 3" = 1'-0"

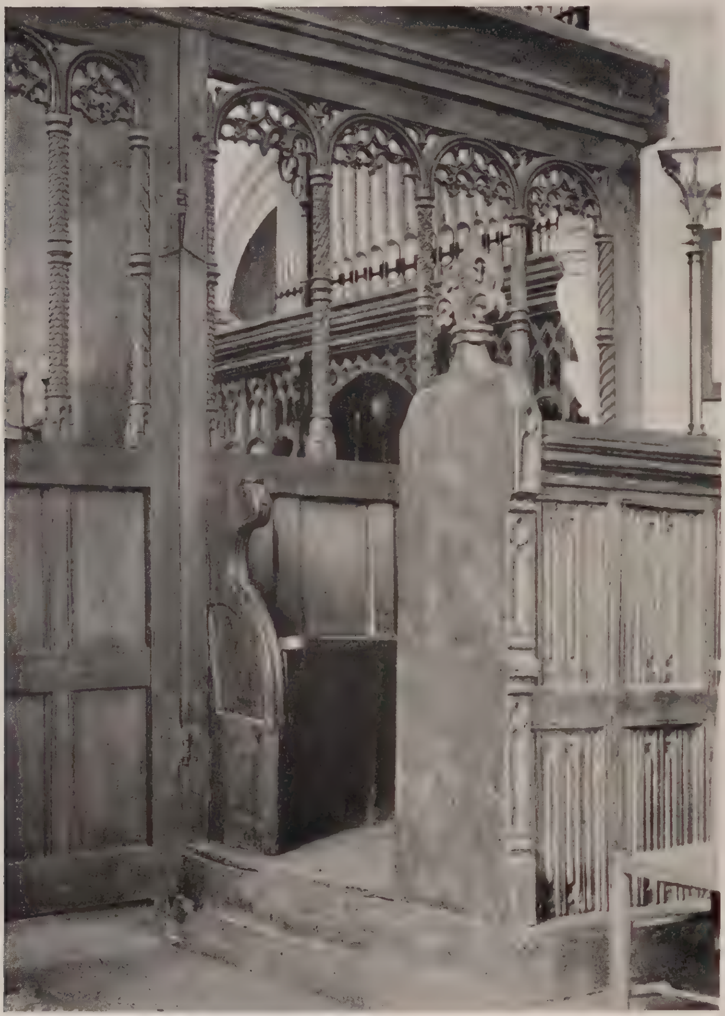
- HALF - ELEVATION -
Scale ½" = 1'-0"

ENGLISH
DETAILS
1923

- OAK ROOD SCREEN -
- THAME CHVRCH OXFORDSHIRE -

MEASVRED and
DRAWN by
HOWARD MOÏSE

ENGLISH ARCHITECTURAL DETAILS



OAK ROOD SCREEN
THAME CHURCH, OXFORDSHIRE

THIS rood screen stands in an early Norman church, and its design is partially Norman to agree with the architecture of the original building and partly Gothic to correspond with many later additions to the fabric and much of its interior ornament. Thus the form of the arches and the ornament of the slender colonnettes are unmistakably Norman, while the ornament within the arches and the use of linen fold paneling is of course Gothic.

A church used during the Gothic period often retains the form of rood screen which effectually shuts off the nave from the choir and sanctuary, this often being to accommodate the "return stalls" which face the altar.

ENGINEERING DEPARTMENT

Charles A. Whittemore, *Associate Editor*

Stages in College Auditoriums

By GERTRUDE LINNELL

Technical Director, Frank McEntee's Shakespeare Playhouse Co.

WHEN I, as Technical Director of the Shakespeare Playhouse Company (playing universities and colleges), get into a new town, do I take a few hours off, to rest and freshen myself after the long train trip, before going over to the hall in a leisurely manner, to set the stage? No, most decidedly I do not. Instead, I rush straight from the train, often leaving another member of the company to engage my room at the hotel, for I know by long and bitter experience that something is going to be radically wrong with the building in which I am to work, and that it must be remedied before I can begin what should be my work.

In some instances this cannot be done as the building was not intended for use by actors, but for some quite different purpose; but in most cases it can be remedied with a little thought and expense. In many cases it has been the result of ignorance of stage needs on the part of the builders, and it would be a long and expensive process to remedy such shortcomings in a building that is often well designed in other respects. And meanwhile the actors travel four or five hours, many times much longer, before they even reach the town where they are to play, and then face sometimes as much as eight hours' labor before they can give a performance. And after the performance they have to pack, and make another train, and go through the same old grind again!

The universities and colleges and even the high schools all over the country are developing new interest in dramatics, and putting on for themselves plays with exactly the same requirements as ours. The faculties are being educated in theatrical lore by their own pupils—unless they are leading the classes themselves. The janitor has very likely worked as a stage hand; in other words, from all sides the architect who does not know the requirements of theatrical performances, and does not recognize their importance, is laying himself open to wider and wider criticism.

While the ideal conditions for presenting a play are rarely possible in a many-purpose building, it might be well to describe an average theater that would be wholly satisfactory for professional presentations. It must not be supposed, of course, that my measurements are static; the Plymouth Theater in New York, for instance, has a depth of, I think, 27 feet, and the Greenwich Village only 25, though both stages have been used for very beautiful productions in spite of their shallowness. It has, however, required a good deal of juggling on the part of their producers to make them so.

The proscenium should be 30 feet wide by 25 high. The gridiron should be at least 50 feet above the stage floor, should cover the full acting space of the stage, and be fitted with a set of lines every 2 feet of its depth. Each set of lines should consist of four individual lines running through steel blocks set at regular intervals over a width of about 25 feet over the center of the stage, and tying off at one side on a pin rail, either in a special gallery at least 20 feet above the stage floor, which is the best way, as it leaves the stage clear for working, or on the floor if necessary. There is also a counterweight system in use in many of the best equipped theaters, notably the Academy of Music in Brooklyn, which does away with the necessity for a fly gallery and the two or more flymen otherwise needful. Its only disadvantage seems to lie in the fact that since the whole four lines must be combined in a single cable in order to be effectively counterweighted, and since the lines themselves are hemp, they stretch unevenly and have to be individually adjusted at the batten instead of in the hand of the flyman. This is also possible to obviate by using a steel cable and fastening it permanently to a pipe batten, to which is tied the batten of the drop to be attached.

This latter method is very expensive to install, but it will ultimately save its extra cost in labor, since one man can manage any number of curtains, drops and solid pieces without leaving the stage. There should be a stairway into the basement on each side of the stage, to do away with the constant tramping of stagehands, extra people, etc., back and forth across the stage. There should be footlights, first, second, third and fourth borders, wired on three different circuits each for rose, blue and amber or white; two four-way or three two-way stage pockets on each side of the stage, and a switchboard that will control the whole lighting system of the house with the exception of the exit lights on one main switch, and the whole lighting system of the stage on a second main switch. There should be separate dimmers for every circuit on the stage, plainly marked. The voltage should be 110 or 120 unless the theater is to be equipped with its own complete set of lights, as the companies that play at colleges will carry equipment of that voltage, knowing that it will be correct nineteen times out of twenty. If alternating current is to be used, all stage pockets should of course be of the same polarity. Professional theaters nearly always use 220 voltage.

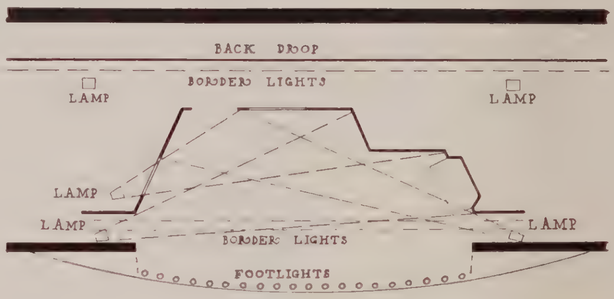
The stage should be on the ground floor or else some provision must be made for getting heavy baggage upstairs, and a large entrance be provided for its reception. The proscenium does not have to be dead center, but at least 10 feet should be left on the short side from the proscenium line. There should be upward of eight dressing rooms, not too far from the stage, their lights controlled by a switch on the main switchboard, so that signals can be flashed to the actors. Having exhausted the "things we cannot do without," we may proceed to the irreducible minimum that we would be glad if we could always find.

Most of the auditoriums being erected, and they are many, are intended to be used for many purposes other than as theaters. Some of them are regularly gymnasiums, some chapels, some lecture halls, but nearly always some problem of adaptation has to be met. More frequently than not there is an organ to be installed, inside or around the proscenium. Three typical examples of such treatment come to my mind. I am purposely not mentioning by name the colleges where they may be found, though the examples may prove useful.

In the first, the most difficult for our use, the hall was intended for the college chapel, and it is being used for a theater only until such time as a more suitable building can be erected, and so deserves no criticism; but it is, nevertheless, a fair example of the difficulties which we meet. The roof is probably, at a fair guess from memory, 70 feet high at the center, and probably 40 at the sides, with a balcony running around three sides of the auditorium at a height of about 25 feet. The distance between the balconies at the sides is over 50 feet, and is occupied by a platform with no enclosure at all, even under the balcony. The back of the stage consists of a long slope of choir stalls, surmounted by an organ the console of which juts into the stage at the center, leaving scarcely room enough for our setting. We carry for just such emergencies some pieces of curtain, 20 x 20, and with the aid of a cable which the college had used in previous struggles, we closed in the stage with our curtains along its seemingly endless width in such a way that we could set our scene behind it; but there was no way of suggesting a ceiling when we had drawn the curtain to reveal the set, and there was no way of putting any backing for our doorways behind the set, or of crossing behind it, excepting by first carefully seeing that the doors were shut, and then running.

The second example is one in which the organ stands straight up at the center-back of a well equipped stage, and the console is in front of the proscenium. Since the organ was placed about 20 feet back from the proscenium it left us sufficient space to play in, and I was well pleased with it, but the local professor of music thought differently, as he said the proscenium interfered with the organ.

The third, however, was so good, so efficient and so practical that it deserves the admiration of every architect in the country, for not only did it meet our requirements completely, but on inquiring of the local professor of music I heard nothing but praise; the hall is also used for commencement exercises, lectures, and, I believe, motion pictures. This also provides for the organ console in front of the proscenium, and the pipes were disposed behind ornamental grilles, around and just above the proscenium arch, on the outside, leaving the stage entirely free, and providing the possibility, which had not as yet been made use of, of installing gridiron apparatus. There was a temporary arrangement of gas pipes which was quite usable for a simple setting. This was a large and very expensive hall with a beautiful facade and a luxurious interior, and the organ difficulty was solved in a manner worthy of it.



Method of Lighting an Interior Setting

All of the indicated lights are not always used; often many special lamps are added. Note how little light can possibly reach the apron

A very frequent lack, we find, is that of depth to the stage. Of course in some cases that cannot be avoided, for some reason over which the architect has no control, but it should be made an axiom in designing such a building that there be at least 20 feet behind the curtain line. That gives 3 feet of passageway between the backing and the back wall, a possible 4 feet from the backing to the walls of the set, still leaving 13 feet to the curtain line for playing space, with a possible 2 feet more to the footlight line. This will be found sufficient for most modern plays, though it should not deter a builder from providing 30 if he can.

Remember that a passage across the stage is always necessary. It must be behind the setting, because there is no other place for it, and there must be space enough between the backing and the set for the actors to make their entrances and exits otherwise than in crab fashion. Too many architects seem to think that the whole space between the back wall and the footlights is playing space. There should also be a passage under the stage, especially if the stage is shallow. If the stage is enclosed by walls or ceiling, keep it wide enough to permit of stacking scenery inside the walls, or, better yet, make part of the walls removable at will, to give wing space. I have seen stages where scenery could be brought on or off only through the auditorium, which meant that no change of scene was possible during the evening. Never enclose a stage in solid walls unless it is demanded, and if you must close it in, either make your proscenium lap as far as possible inside the walls, or else make provision for a false proscenium of curtains or woodwork (not allowed where there are fire laws), or, best of all, make the walls themselves removable in sections.

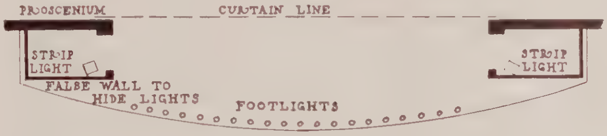
The back wall of a shallow stage can be made very useful as a cyclorama if kept unencumbered by entrances, heating pipes or paneled divisions, or the other impedimenta which so often clutter it. This is especially true if a passageway is provided behind it.

In cases where an over-large proscenium is necessary, a false proscenium of the same material as the house curtain will be found useful. This is a border and two side strips (legs or tormenters) hanging just behind the curtain itself, and hung so that they can be closed in or opened out to make a larger or smaller opening. With modern fireproofing methods there is practically no danger from fire even without an asbestos curtain, but there is always the danger of a puff of smoke, from any cause, creating panic.

Most house curtains in many-purpose buildings are of the sort that divides in the center rather than the type that raises and lowers. It is more graceful and more dignified for the many uses to which it is likely to be put. A simple draw curtain, running backward and forward on a rod, is always more satisfactory, though not so decorative as a tableau curtain. The tableau curtain makes an uneven frame, requiring the use of leg and borders behind it; it is heavy to draw, and as the ropes stretch, must be continually readjusted. But whatever type of curtain you specify, at least make it controllable from one spot, preferably by one man, and from the side on which is placed the electrical switchboard. The stage manager otherwise has to run backward and forward from one side to the other innumerable times during the evening, and when two cues come too close together, as they often do, in trying to get across there is danger of muffing.

As to the means of control for a house curtain, there is every method from the simple lines running through blocks or rings and held in the hand, through the old fashioned drum arrangement, to the most modern electrical control. The drum is very unsatisfactory as it is too easy to wind the wrong way in emergencies. The electric motor, though efficient and easy, is too deliberate a thing for play purposes, as it cannot be regulated to different speeds, which is most desirable; some acts require a quick and others a slow curtain. The best is the traverse curtain, used on house window draperies by every decorator in the country—a single continuous line attached to the inside edges of the curtain, so that one man can control it at any desired speed. I once ran across a curtain that needed four different men in four different places to operate it. Needless to say, every single finale, though we rehearsed them carefully, was jerky and slow.

The apron is the projection of the stage in front of the curtain line. Excepting for certain spectacular productions, and then only when special lighting effects are desired, more than 3 feet of apron is not only waste space but is a real difficulty in the way of production. In many made-over auditoriums this apron is tremendous, and is an attempt to offset a too shallow stage. Like most makeshifts it is very unsatisfactory, especially for the intimate type of modern play, as it leaves a large space that is impossible to light excepting by spot lights across the audience and by footlights. The cross-audience spot light is frowned upon excepting in the technique of musical comedy, or for special effects when needed, because of the sharp shadows it must cast on back drops and scenery. Footlights are very useful and should be included in the equipment of every theater, but used alone they are the ugliest of all lights. Another disadvantage of wide aprons is the bare state they must always be left in. No furniture, prop or scenery can be put in front of the curtain unless it is to stay there throughout the evening. Nothing would be more fatal to illusion than to see a property man changing furniture in front of the curtain, so the apron must remain bare, and the actors cannot go down on it during the action of the play because the lighting will be different from that on the set.



Suggested Way to Make a Large Apron Less Objectionable

However, one way the apron can be made useful if it is necessary to have it, is by erecting a false wall on each side of and in front of the proscenium, as near the front of the apron as possible, to hide strip or bunch lights, which will aid materially in lighting the apron, and the stage as well. These pieces can be as lightly constructed as necessary so long as they are light-proof; mere frames covered with canvas and removable at will may be used, or they can be incorporated as a part of the building. In the latter case if there is also included a hood to match, and the house curtain and a strip of border lights hung inside, there are overcome almost all the objections to an apron stage. Earl Carrol, in his beautiful new theater in New York, has a regular stage, with a straight row of footlights, an apron that can be raised or lowered out of sight, and a permanent hood with a second house curtain that can be put up when desired, to cover the apron. Under such circumstances an apron becomes a thing to conjure with instead of a dreary expanse of waste space, but unfortunately the fire laws of New York will not permit its use!

Inside the proscenium we must have some practical method of hanging our scenery. Flats, that is flat units of scenery, may be toggled together, and will stand alone like a screen, but a ceiling cannot be put on top of it, or even borders without some arrangement for hanging, and the back drop must also be hung, so that even for the simplest of interiors four sets of lines are required at the least—three for the ceiling, and one for the back drop. Practically everything in an outdoor set must be hung. A regular professional equipment of gridiron and sets of lines or even a really modern counterweight system (which will save its extra cost in lowered cost of operation) should not be too great a strain on a $100,000 or $150,000 building.

A more simple arrangement of pulleys and lines that can be worked through holes in the ceiling costs very little indeed, but of course care should be taken that the girders on which it hangs are heavy enough to stand any weight that may be put on them. This arrangement through the ceiling works very well where only an occasional play is to be given. There should easily be room for six or eight sets of lines in a medium sized ceiling without giving it too polka-dotted an appearance. It is really the only practical arrangement where the building is used customarily for lectures or concerts. Such an arrangement is in use in Carnegie Hall, New York, but with a complete gridiron system hidden above.

Usable electrical outlets are the most important, simple and easily furnished commodity. I lately went into a building that will serve as a good example of what not to do. In this case the equipment was beyond reproach for gymnasium or assembly purposes, with a plentiful supply of electrical current, and a great deal of money had been spent on fixtures that should afford protection for the bulbs and at the same time be attractive in appearance. But the control was from two separate boxes, one at the front of the auditorium, and one on the stage, so close to the proscenium arch that it was almost impossible to reach it at all during the play. These boxes, instead of having one simple control switch in each, had a series of push-buttons such as would be excellent in the front hall of a residence, but for us were absolutely useless. There were, besides, only two ordinary wall plugs, intended for a lecturer's reading lamp, into which we had to connect as much of our lighting equipment as we dared, with the fear of an overloaded circuit staring us in the face. One wonders why, when the builders were putting in those boxes, they did not include in their stage switchbox a main knife switch for the stage lights and another for the auditorium. If they had, we could have tapped the stage switch in twenty minutes, which would have saved making mad signals to the man at the house switchbox in front of the audience every time we wanted to start an act, besides leaving off half of our lighting because there was no way of attaching it, and saving two hours' work jamming cable twice too large into ordinary reading lamp wall plugs. The total extra cost of those switches would have been exactly the cost of the switches themselves, if installed at the time of building—about $5. To change now would cost much more, but sooner or later it will have to be done, for no one can get any results with such an arrangement.

I have said nothing at all about professional lighting equipment, as any architect intending to put in such equipment must get estimates from a professional lighting company. If he decides to allow a general sub-contractor to handle the work he should be very sure the man has done work of the same sort in a satisfactory manner before. However, there is one suggestion I will make. If one can have stage plugs, full sized and of some standard make should be had. The difference in cost is exceedingly small, but the difference in satisfaction to all who use them is tremendous. If possible provide two or three border lights at least, and footlights. There is no excuse for not providing footlights, though there is a rumor current among "little theater" enthusiasts to the effect that footlights are no longer the thing. That rumor is quite confined to the little theater movement, since even the most modernistic of the professional designers use at least some footlights to take off the curse of overhead lighting. But the footlights need not extend beyond the edge of the tormenter line. There is no use in lighting the picture frame. They can be made to sink into the floor when not in use. If one can have only light borders, place the second so that it will light the back drop instead of the center of the stage. There should be no reason for not having three, however.

Then, last, but dear to the heart of the actor, we come to dressing rooms. The first necessity is for two, each large enough for five people to dress comfortably. We much prefer at least four, but the irreducible minimum is two. They should not be mere passageways from the auditorium to the stage, as they so often are, for obvious reasons, nor should there be a single light only, hanging from the ceiling 12 or 15 feet above the actors' heads. Find out from the owners whether they are going to furnish the dressing rooms with tables and mirrors or dressing tables, and if they are not, provide for 18-inch shelves 3 feet from the floor, with mirrors above, and four electric light bulbs around each mirror. If they are going to put in dressing tables, use the lights anyway.

Don't forget that actors will need hooks to hang clothes on,—just as many as there is room for,—and running water, for how can they put on grease paint and cold cream and then handle costumes that must be fresh and clean when they have no water to wash their hands? Again, don't put water in one dressing room and not in the others, for actors prefer to do their washing separately.

The Industrial Cafeteria

By N. W. ALDRICH

THE industrial cafeteria during the past few years has not only become popular but has proved to be a necessity, especially where so many large industries are now located in the outskirts of cities where employes do not have time at noon to go home for lunch. Employers have found that better results are obtained from employes properly cared for and provided with proper food, and for many reasons the cafeteria should take high rank with other modern conveniences.

To find the proper location for this department is not always the easiest problem in modern factories, and unless the architect or engineer provides for it while making preliminary plans he will in most cases find himself in difficulty when he tries to borrow, beg or steal sufficient floor space in a desirable location for the cafeteria or restaurant. It is customary to locate cafeterias or lunch rooms as near as possible to a section of the building where water supply, gas and soil pipes are located. This is generally done because of the fact that in such a location cafeteria fixtures may be installed at less expense and at a saving on plumbing. It is not always advisable to do this, since the grease from these fixtures alone, if properly trapped and cared for, would in a short time pay for the added cost in plumbing involved in placing the cafeteria in a more desirable location. Dressing rooms, lavatories, etc., should be away from this department if possible. Employes who work in the cafeteria should care for their personal appearance before reporting for duty, and the manager who allows even a mirror to be hung in the kitchen will have no one but himself to blame when someone finds a side comb in the hash or a powder puff in the mashed potatoes.

In order that food may be prepared and properly served and appreciated by those concerned, care must be taken that sanitary conditions prevail throughout, and unless such conditions are possible, the restaurant manager or cafeteria director is often blamed for things for which he is not responsible. It is not all sunshine for the manager of this department, as some may believe. In the first place, he is as a rule employed by people who know practically nothing about the workings of his department, and although he is supposed to have full charge, there is no end to suggestions. While he is not required to show a profit in his department, he is expected to furnish the best at a lower price than the lunch room proprietor who has a stand across the street. He must satisfy everyone employed in the factory, from the typist who insists upon salads and eclairs three times a week during the winter months to the man in overalls whose appetite calls for roast pork and plum pudding three times a week in hot weather. He may try his best to please everyone, but this is impossible. He realizes the importance of changing the menu daily as well as serving a variety of foods. He also realizes that preparing the variety that would please everyone would mean a great loss, and that the cash register would never balance the garbage can. Therefore, provision should be made for preparing and serving a variety of food, but the variety should never be overdone or expected to compete with that of the public cafeteria, excepting in the larger plants where a thousand or more people are catered to each day.

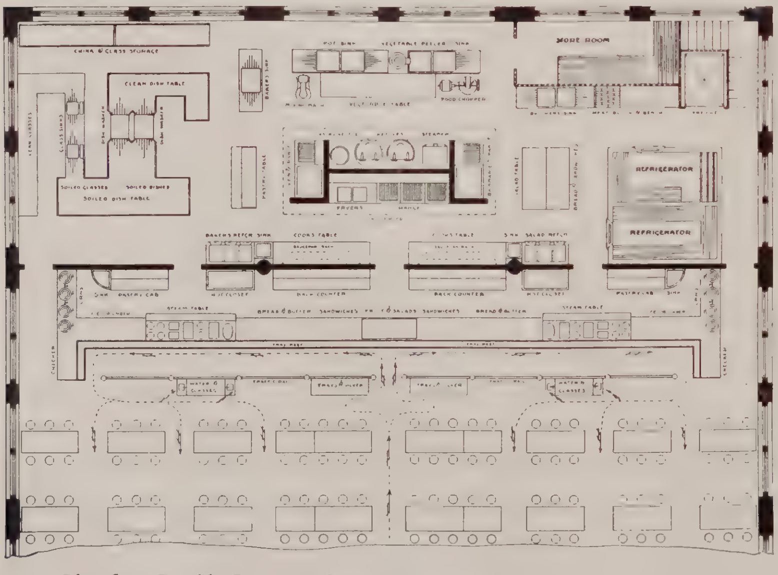
Many managements of the larger industries have solved this problem by erecting service buildings which provide rest rooms, club rooms, hospitals and other conveniences as well as lunch rooms or cafeterias. It is needless to say that service buildings are ideal, providing they are of sufficient size, but in many cases these buildings, which are as a rule erected principally with the cafeteria in view, do not contain adequate space on one floor alone for this purpose. Compare the cost of constructing a modern service building with that of an extra story on the factory! Also, compare the advantage of having seating capacity for at least one-half the number employed, as well as kitchen, store rooms and serving counters on the same floor. While many cafeterias may have seating capacity for one-fourth or one-third the number who lunch daily, there is more chance for confliction and dissatisfaction among those in charge of the various factory departments, owing to the fact that luncheon time really covers a period from 11:30 until perhaps 1:30 or 2 o'clock. Feeding employes in relays not only makes extra work for the cafeteria manager but will at the same time prevent his furnishing 100 per cent service. This perhaps would not apply to department stores, where a few from each department lunch at the same time, and in such cases there is as a rule a continuous and steady service, but at no time is there the rush that would compare with that of the factory employes, and time would permit the collecting of soiled dishes and the caring for tables properly as well as replenishing supplies at service stations.

Opinions relating to the capacity of a cafeteria counter are so varied that it is almost impossible to estimate the exact number of persons who may be served in a given time. This will depend upon several conditions, among which are the placing of the cafeteria in a location which is desirable as well as suitable and, what is quite as important, the conducting of the cafeteria by an able and experienced director who is backed up by the necessary co-operation. Were we to consider, for example, the cafeterias installed at the various large shipyards and other industries during the war, we would be safe in saying that 250 persons could be served in 10 minutes at a single counter without any confusion to patrons.

The diagram on this page shows a two-way or double service station with two distinct counters, each of which should have a capacity of serving 250 persons in 10 minutes, providing a few days have been allowed for the patrons to become familiar with the service. Time is required for the employes as well as for the patrons to become accustomed to the service. Providing 1,000 persons are to be served from these two counters, sufficient time should be allowed between the first and second relays in order that all dishes may be returned to the dish rooms, the tables properly arranged, and the counters redressed and made as fresh and inviting in every detail for the second relay as for the first.

Few people realize the amount of space required for properly washing dishes, and that unless suitable tables are provided to care for soiled dishes the breakage will be one of the chief items of expense which must be contended with. The soiled dish table is ~~in most~~ cases set against a wall or partition because space will not permit any other arrangement, but whenever it is possible to set this table away from the wall it is advisable to do so. If this can be done the table may be 3 or 4 feet wide instead of 30 inches, and it will allow those operating the washing machine to work without interference with those bringing soiled dishes from the table; best of all, it will insure sanitation which cannot be obtained with wall fixtures. If more architects and engineers had studied cafeteria planning more carefully it would have greatly lightened the burdens of those who must O.K. crockery bills!

Counter in Employes' Cafeteria, Wm. Filene's Sons Co. Store, Boston



Plan for a Double Service Cafeteria, Economical and Complete in Layout
Dimensions of kitchen, 25 x 77 feet

Kitchen equipment will vary according to requirements and fuel, and wherever it is possible to supply high pressure steam it is advisable to do so. Use of jacketed kettles and vegetable steamers will not only reduce the fuel bills, but will be more convenient for cooking in quantities, and it is quite as necessary for heating steam tables, coffee urns, dish heaters, etc. The man who figures that he can operate his cafeteria successfully by buying pastry is in most cases mistaken. The success of 90 per cent of the industrial cafeterias depends upon their supplying good pastry and good coffee. This has been proved by some of the successful cafeterias which were originally started with doughnuts and coffee alone, and which have gradually grown to become important and appreciated departments. Some people are of the opinion that pastry is not wholesome food for employes, yet everyone eats it, and unless allowed to have good pastry, cooked under sanitary conditions, people will insist upon over-indulging at their first opportunity and are not likely to get as good pastry as would be prepared under the supervision of the cafeteria's chef.

In addition to the cafeteria's counter service some factory managements find it practical to allow the director of this department to distribute food and coffee through the factory as well. Various types and styles of conveyors have been adopted for this purpose, and with the variety of food sometimes provided, such a conveyor would practically amount to a traveling cafeteria in itself.

Careful planning of a cafeteria will aid in making it possible to give service with a comparatively small staff, and this in turn has the effect of reducing overhead costs and increasing earnings. It is often possible, for example, to so arrange the layout that one individual can perform the duties ordinarily assigned to two.

With this department well planned and with proper management and co-operation the employer should in a short time realize the cafeteria's importance in many different ways, and soon forget the cost of installation or the amount of floor space it necessarily occupies.

Removing the Blight from Blighted Neighborhoods

THE PATERSON PLAN FOR RECLAIMING SPOTTED DISTRICTS

By HERBERT S. SWAN, *City Planner*

THERE are two problems in zoning—one the control of new buildings and the other the control of existing buildings. Zoning looks to the future. It is in no wise retroactive in its provisions. Any sporadic and out-of-place building located anywhere within the city limits is allowed to continue. The ordinance takes no action toward its expulsion from any section of the city.

Every non-conforming building may be used the way it is at present as long as the owner chooses. Structural alterations to the extent of 50 per cent of its assessed value are permitted every non-conforming building, provided the building is not enlarged. Any non-conforming building may, moreover, be changed for any other non-conforming use excepting that of an inferior class. Even after a non-conforming building has been changed for another non-conforming use, so long as the new non-conforming use is not excluded from a light industrial zone, structural alterations equal to 50 per cent of the assessed value of the building are allowed in order to better adapt the building for the new use. If the building is damaged by fire to not more than 50 per cent of its assessed value, it may be reconstructed in full.

One exception is made to these rules, that is, in the case of buildings and uses excluded from light industrial zones. Such a non-conforming use may not be changed for another non-conforming use of the same class in instances where the building has been structurally altered (no matter how much or how little), since the adoption of the ordinance, to make it more adaptable for the original non-conforming use. Moreover, where such a non-conforming use has been changed for another non-conforming use of the same class since the adoption of the ordinance, the building is thereafter prohibited from being in any wise structurally altered.

The practical operation of these provisions may probably be best illustrated by a non-conforming building used as a grocery in a residence zone. Such a building is guaranteed every conceivable right necessary to its continued existence. It may continue as a grocery store for as long a time as its owner chooses, without any interference whatever. It may be used for any other kind of business allowed in a business zone. It may, for instance, be changed into a delicatessen shop, a butcher shop, a bank, a bakery—indeed, into use for almost any of the ordinary businesses commonly found near residence districts. It may have structural alterations made in the building to an extent equal to 50 per cent of its assessed value. If the building is damaged by fire to not more than 50 per cent of its assessed value, it may be reconstructed in its original form. The only limitations upon its free use are that (1) the building may not be enlarged unless the use is changed into a conforming use; (2) the use may not be extended at the expense of a conforming use, and (3) it may not be changed for another non-conforming use of an inferior class.

These privileges are all matters of right. They are conferred by the zoning ordinance upon the owners of non-conforming buildings throughout the city, and are in no wise dependent upon obtaining the permission of the Board of Zoning Appeals. The ordinance is very clear on the point that regarding these matters the Board of Zoning Appeals need not be considered. Instances may, however, arise where the foregoing limitations might work a hardship in their operation. For such instances, the Board of Zoning Appeals has been constituted to temper the administration of the law with the principles of equity and justice.

If a building used as a store or a factory were allowed in a residential zone and its owners permitted unlimited right of enlargement or of adapting the building to unrestrained changes of use, the owners of adjoining residence property would be discriminated against. Should the land upon which stands the building devoted to non-conforming use be permanently designated as belonging to an industrial zone, irrespective of all extenuating circumstances, it would be a very pertinent question whether the adjoining properties in such a zone should not also be considered industrial zones, and thus the entire purpose of the zoning movement would be in danger of frustration.

Every existing building, given up to any use, no matter where it is situated, has acquired vested rights which the zoning ordinance does absolutely nothing to interfere with. But when the existing use is discontinued and it is proposed to adapt the building for a new use, or when it is proposed to extend the non-conforming use, to enlarge the non-conforming building, to construct a new non-conforming building, or to reconstruct a non-conforming building completely destroyed by fire, the change should, in all justice, be reviewed by an impartial body so that the rights of the adjoining owners in the restricted zone should not be ruthlessly violated and something more injurious to them than the present use be permanently imposed upon their neighborhood. It is for this reason that the Board of Zoning Appeals is established. This board is not formed to evade the settlement of these questions. In the very nature of the case these questions cannot be settled at the time the zoning law is put into effect. As yet the precise question to be settled some time in the future has not presented itself, and therefore no decision has been made.

No owner of a building devoted to a non-conforming use knows just when he wishes to change it for some other non-conforming use or what the new non-conforming use is to be, or when he wishes to enlarge his plant; or, if his plant were to be destroyed in part or whole by fire, whether he would or would not wish to reconstruct his building in its present location and for its present use. These are matters that may not come up for decades. In the meantime, the conditions in the vicinity may have entirely changed, and the owner of the building given up to its present non-conforming use may himself have changed his mind and put his property to a conforming use.

Suppose there were no regulations affecting non-conforming buildings or uses. Assume that every sporadic store were made a business zone and every isolated factory an industrial zone. Then the community would have surrendered every hope of ever reclaiming these small, scattered areas for their proper uses. Every use of this character could be extended whenever the owner chose. New uses could be introduced and established. What is at present a temporary use of the property could be permanently established in the neighborhood. In other words, a small non-conforming use would be invested with all the privileges and immunities of a building located in its proper zone. The owners of the plots upon which such buildings stand could terrorize owners of adjoining property by threatening to construct buildings more injurious than those there at present, and thus hold back the appropriate development of the entire locality.

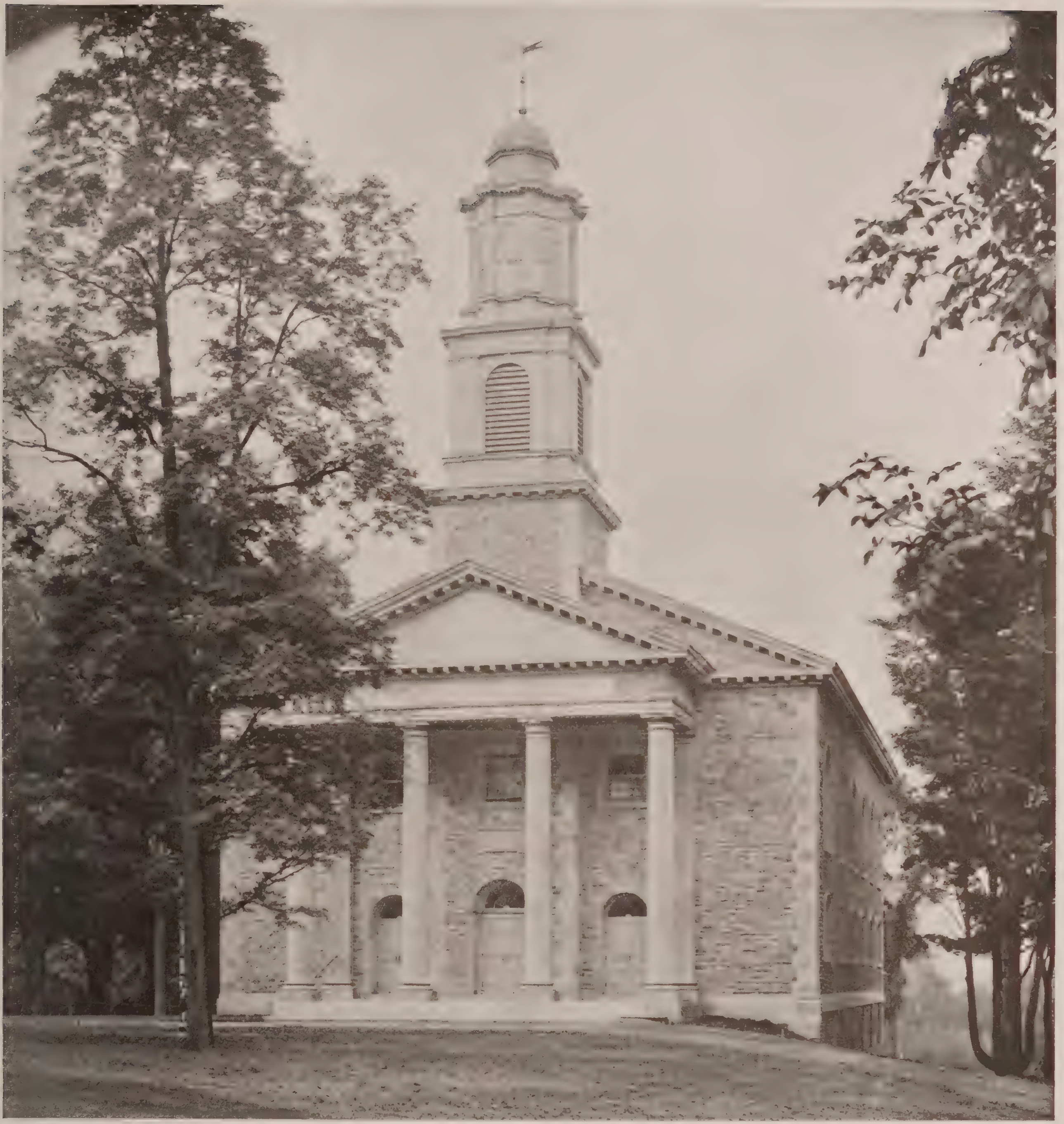
The provisions of the zoning ordinance relating to non-conforming buildings, it is thought, will in time go a long way towards righting the wrongs suffered by different neighborhoods from unregulated building in the past. The consequence of controlling the changes of use in non-conforming buildings, to be as far as possible in conformity with the regulations of the use zone in which they are located, will be ultimately to "weed out" many of the sporadic uses which now afflict different localities. The heroic way to treat non-conforming buildings is, of course, to expel them bodily from restricted zones. This would solve the problem at one stroke, but it would be most unjust to the owners of the non-conforming buildings. Regulations designed with a view to preventing an increase in the offensiveness of the uses and to gradually eliminating them altogether will in the end achieve the same result as initial banishment, with this difference; no violence is in the meantime inflicted against the undesired use.

Certainly the non-conforming building must be controlled. Not to limit the extent to which it may be structurally altered or the manner in which it may have its use changed is to entrench it permanently in its present location, to the lasting injury of neighboring property.

Farm Buildings of Walter Douglas, Esq., Dobbs Ferry, N. Y.

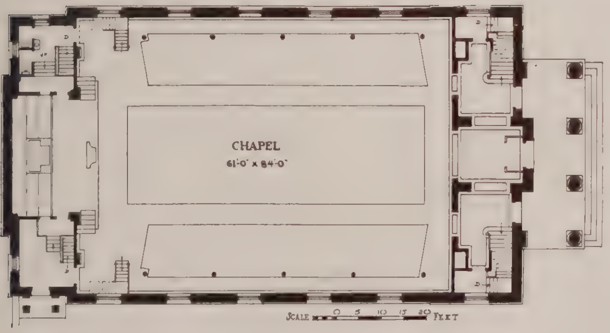
Alfred Hopkins, Architect

(See Plates for Additional Illustrations)

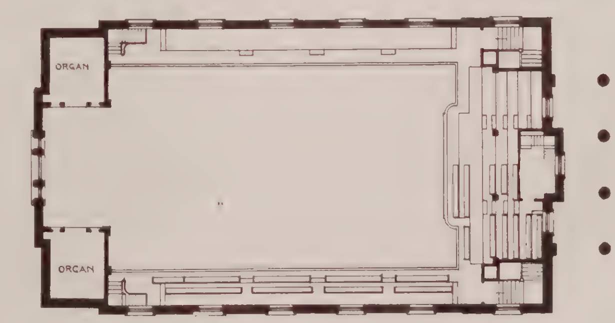


Photos by Stone Studio

GENERAL VIEW OF FACADE



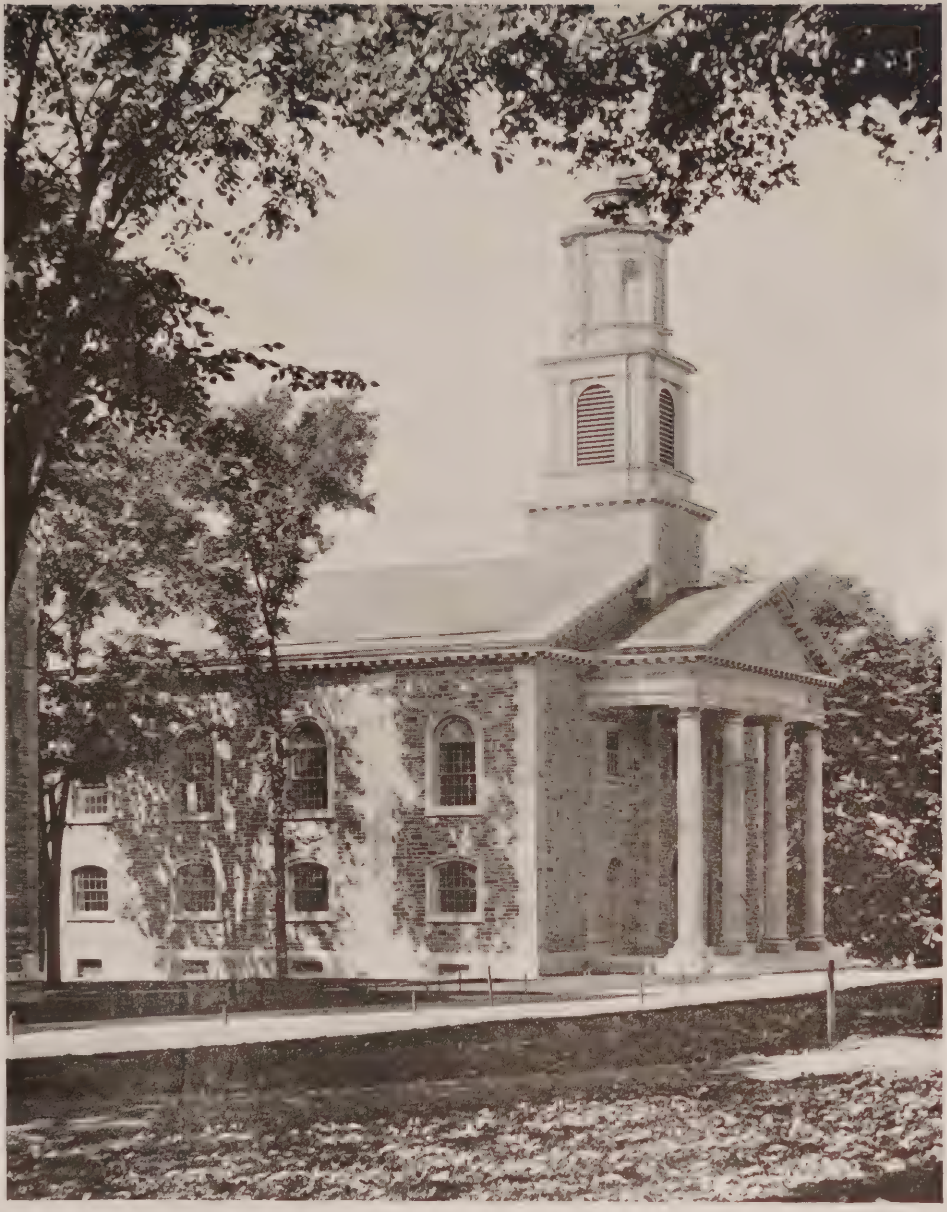
FIRST FLOOR PLAN



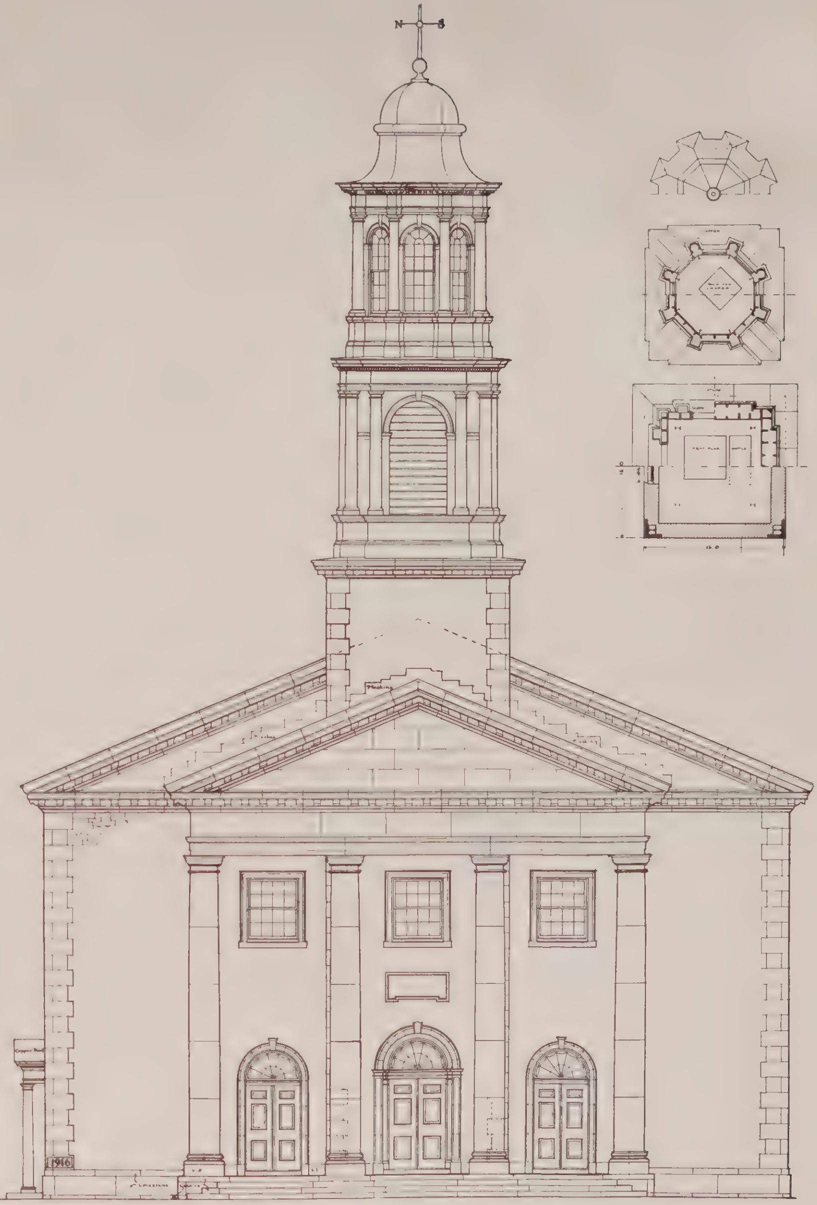
GALLERY FLOOR PLAN

CHAPEL AT COLGATE UNIVERSITY, HAMILTON, N. Y.

HARDING & SEAVER, ARCHITECTS



VIEW OF SIDE AND FRONT

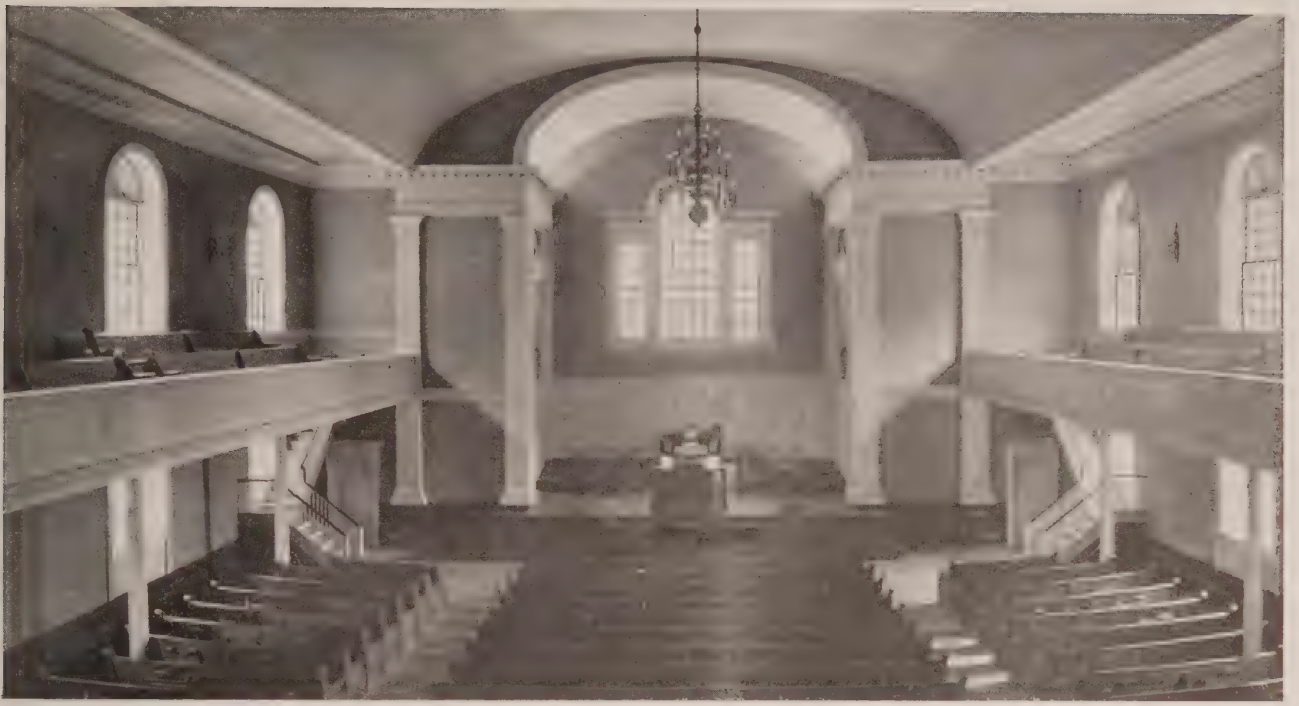


FRONT ELEVATION

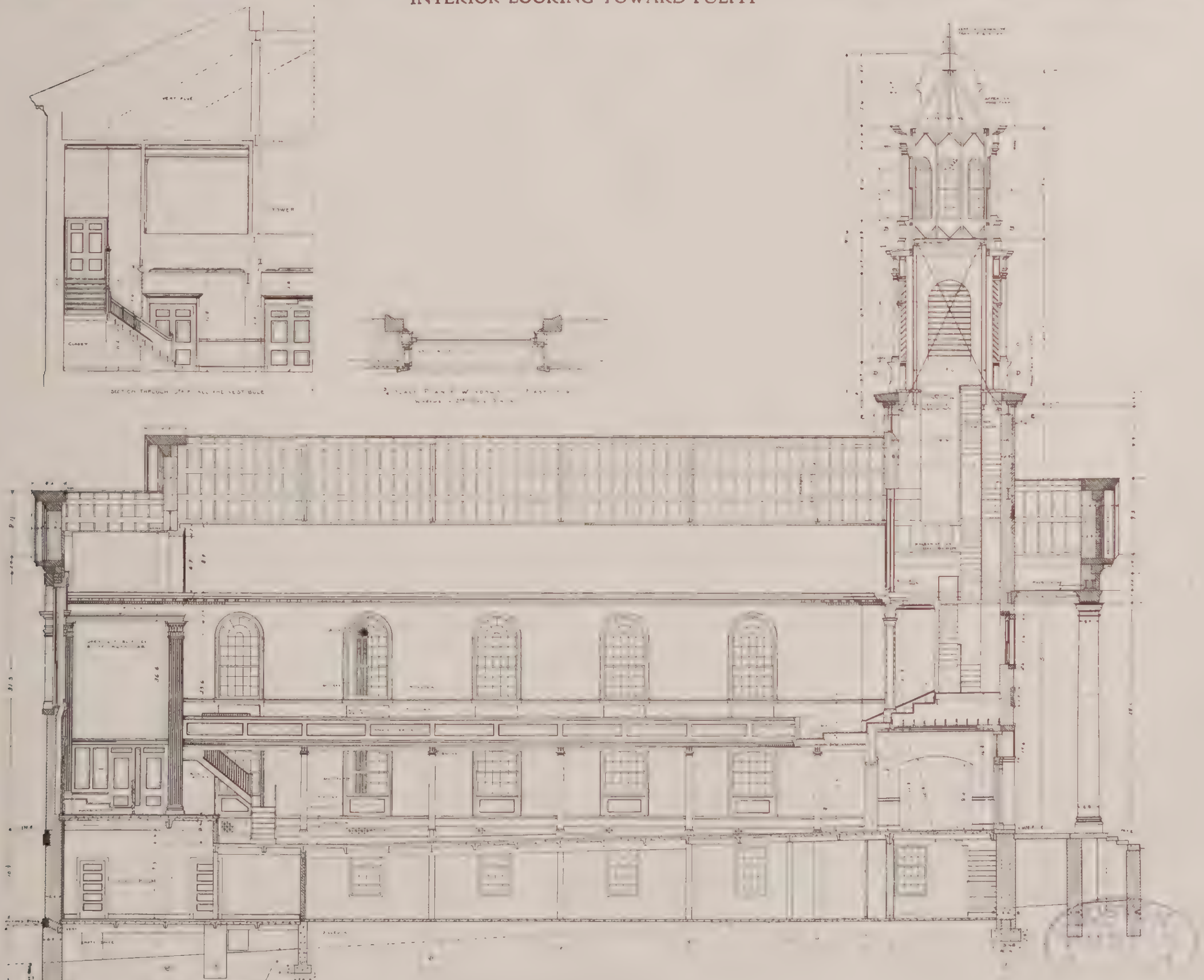
CHAPEL AT COLGATE UNIVERSITY, HAMILTON, N. Y.

HARDING & SEAVER, ARCHITECTS

PUBLIC LIBRARY



INTERIOR LOOKING TOWARD PULPIT

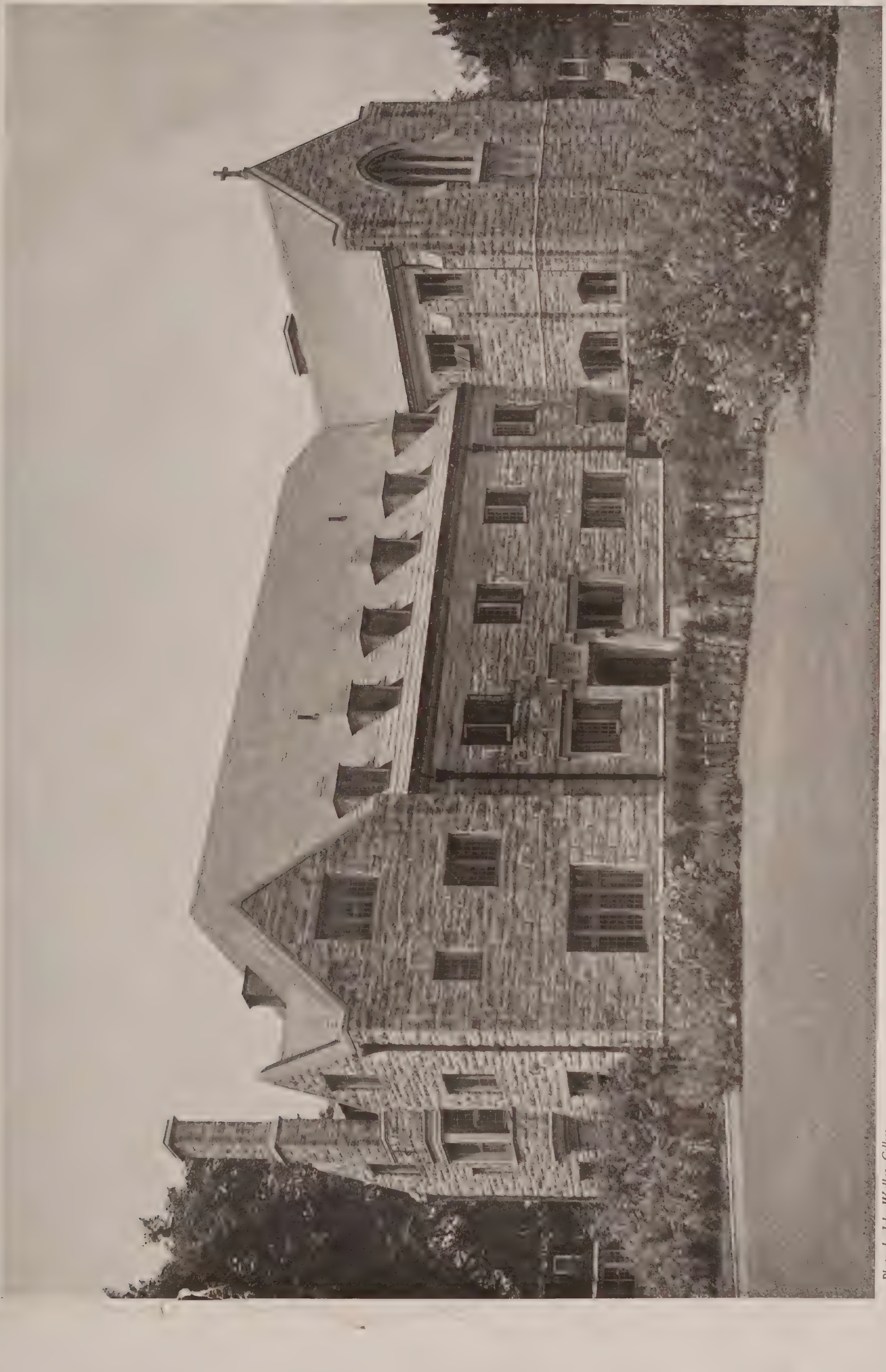


SECTION THROUGH STAIR HALL AND VESTIBULE

LONGITUDINAL SECTION

CHAPEL AT COLGATE UNIVERSITY, HAMILTON, N. Y.

HARDING & SEAVER, ARCHITECTS

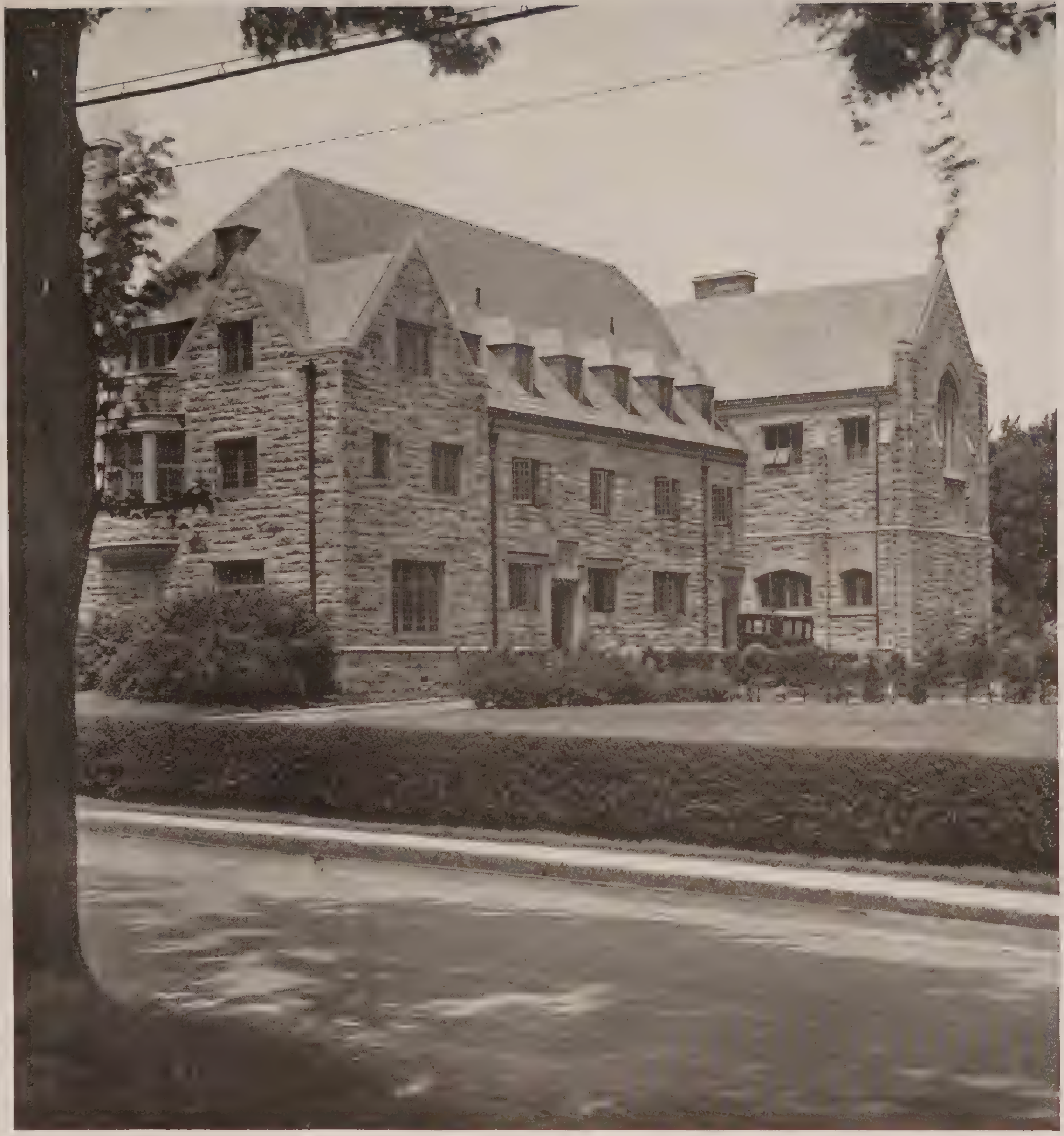


Photos by John Wallace Gillies

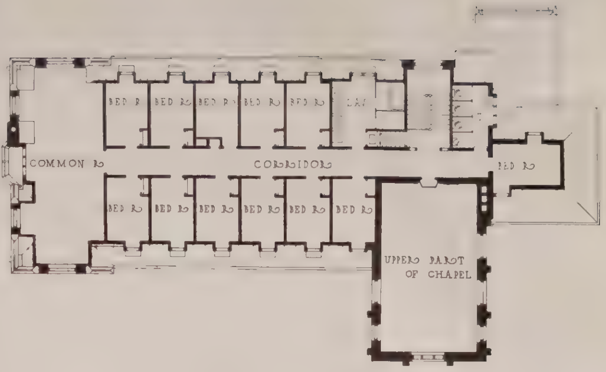
GENERAL EXTERIOR VIEW

ST CECILIA'S PRIORY, ENGLEWOOD, N J.

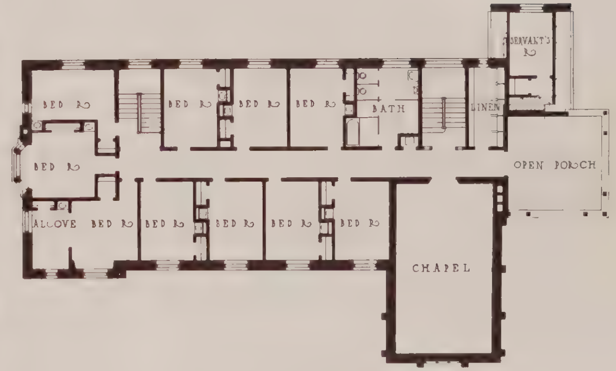
RAPHAEL HUME, ARCHITECT



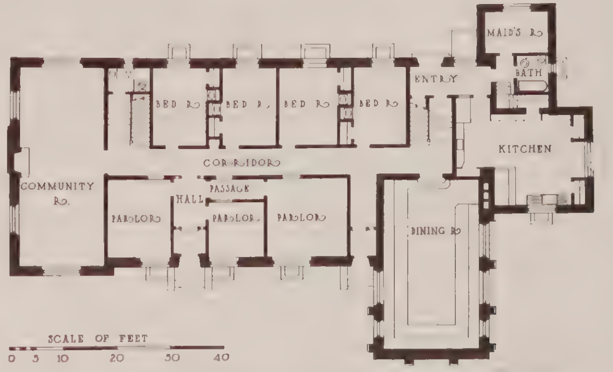
VIEW OF ENTRANCE SIDE



THIRD FLOOR PLAN



SECOND FLOOR PLAN

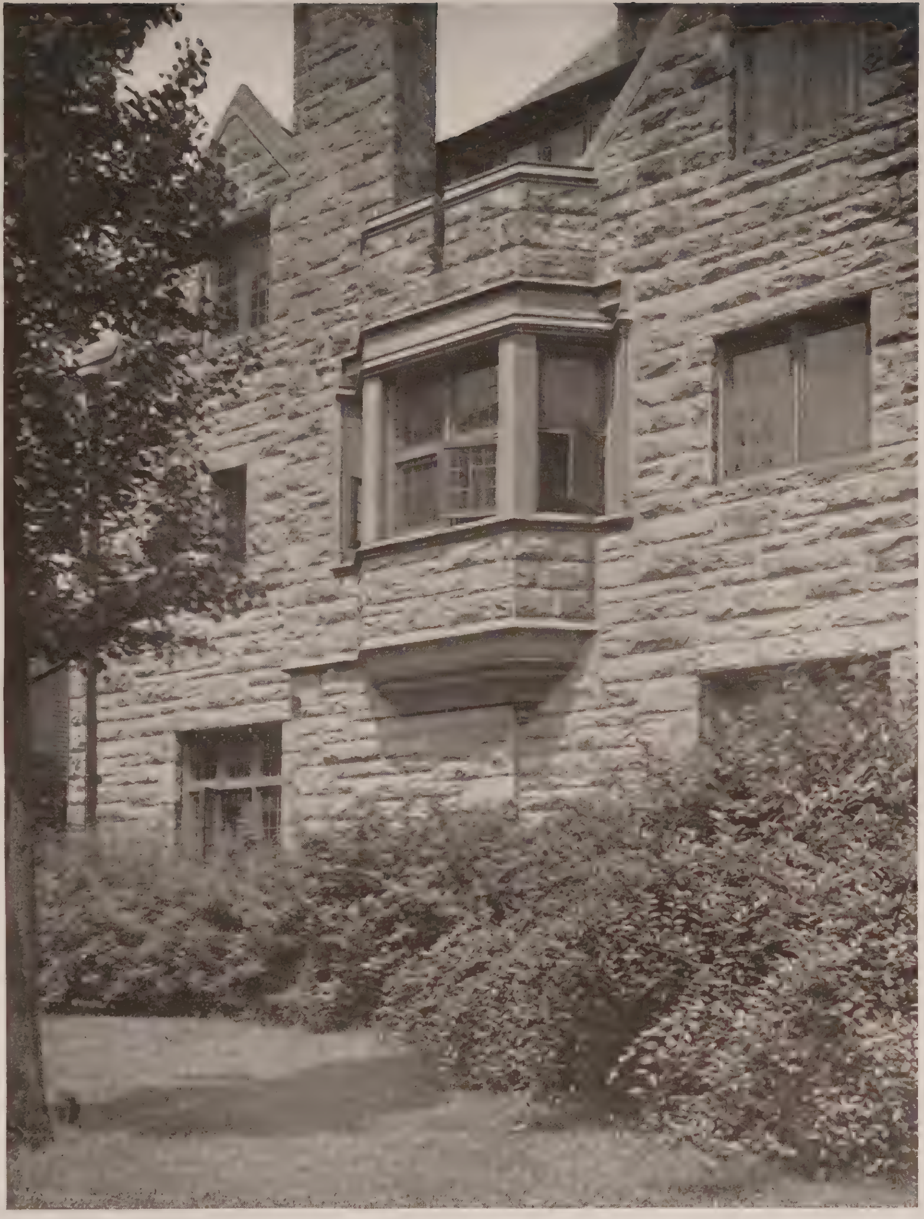


FIRST FLOOR PLAN

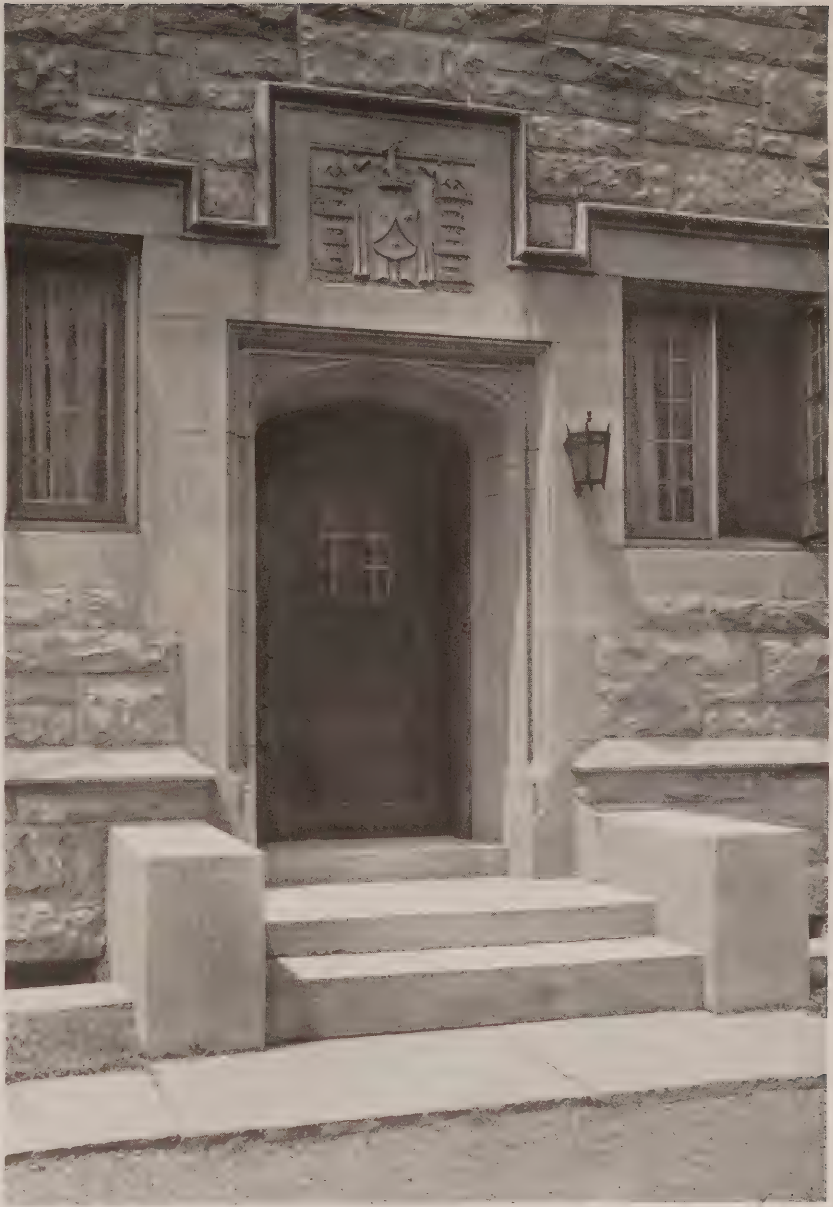
ST. CECILIA'S PRIORY, ENGLEWOOD, N. J.

RAPHAEL HUME, ARCHITECT

LIBRARY



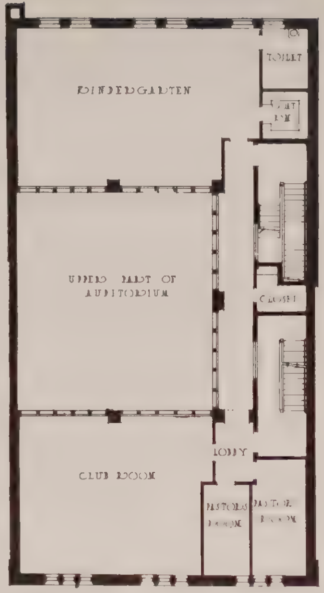
DETAIL OF BAY AND GABLE



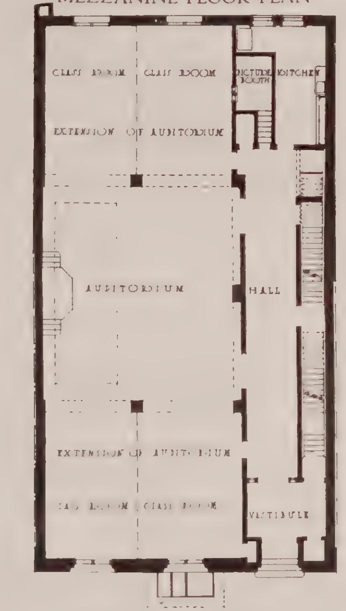
DETAIL OF ENTRANCE

ST. CECILIA'S PRIORY, ENGLEWOOD, N. J.

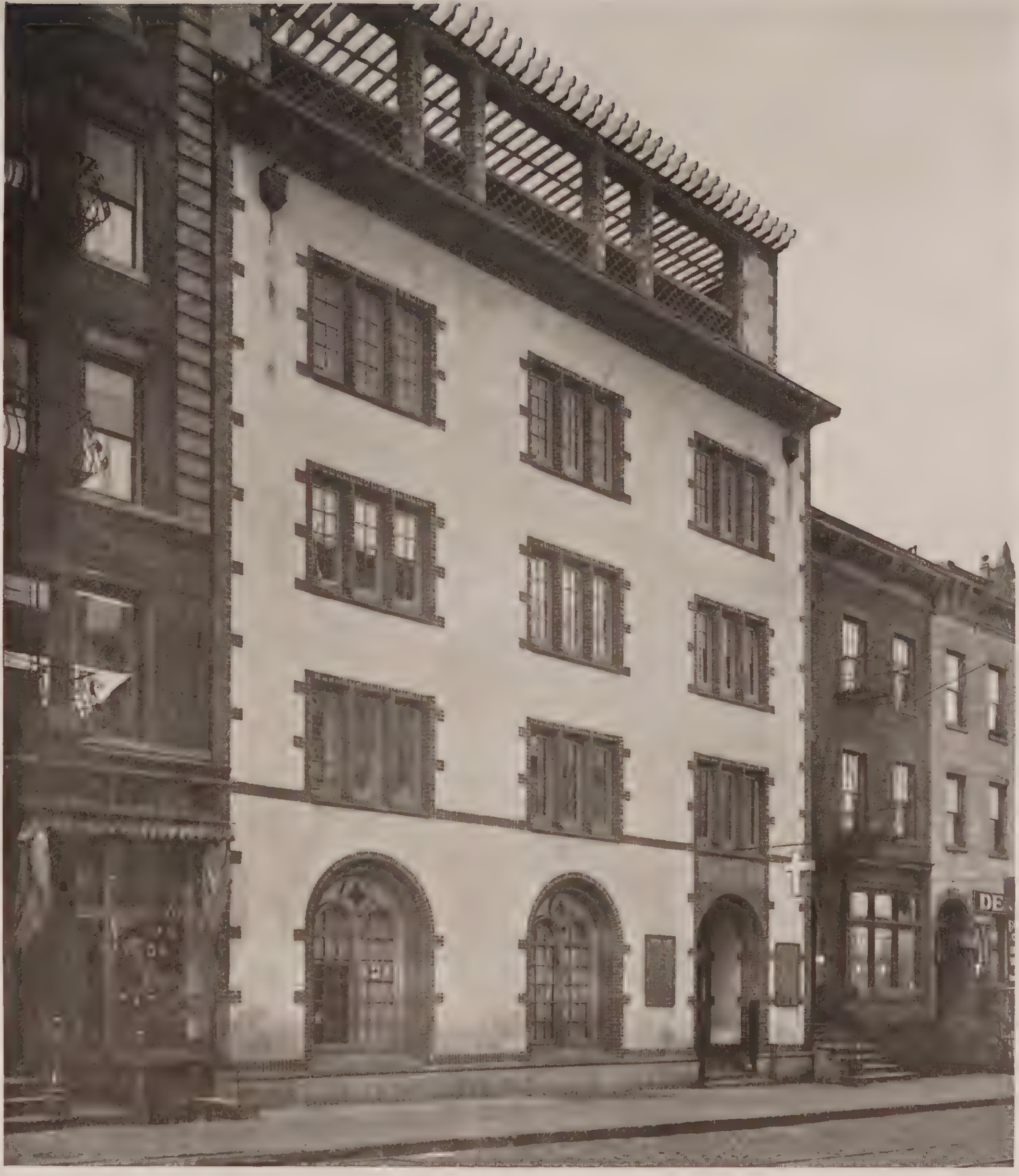
RAPHAEL HUME, ARCHITECT



MEZZANINE FLOOR PLAN



FIRST FLOOR PLAN

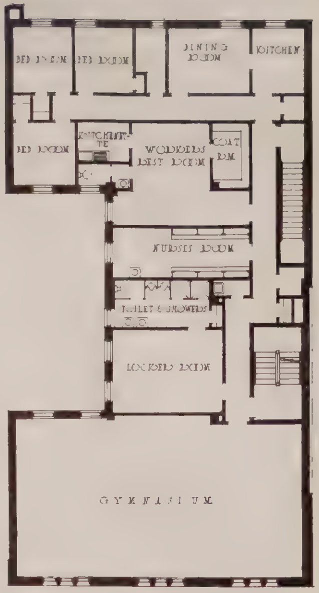


Photos by John Wallace Gillies

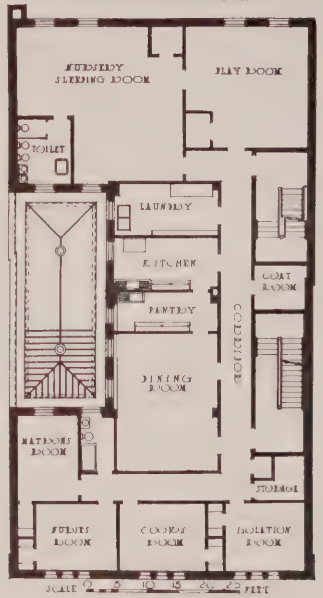
GENERAL VIEW OF FACADE

BETHLEHEM CHAPEL AND MEMORIAL HOUSE, BLEEKER STREET, NEW YORK

GEORGE B. POST & SONS, ARCHITECTS



THIRD FLOOR PLAN



SECOND FLOOR PLAN

A New York Settlement House

BETHLEHEM CHAPEL AND MEMORIAL HOUSE

GEORGE B. POST & SONS, ARCHITECTS

THERE are few types of social service buildings which present opportunity for a more hopeful development than the structures which are devoted to settlement work of different kinds or to such closely allied forms of effort as community houses or day nurseries. In many instances such institutions are placed in densely populated city districts where the people whom it is hoped to reach are of foreign extraction, and a happy inspiration has led to the use, in planning the buildings for such purposes, of the types of architecture and decoration to which these people have been accustomed in their homes across the sea. It is not difficult to realize the feeling of a man or woman of the peasant class, used to the order and symmetry of the architecture of European countries, to find amid the miles of dreary streets of an American city a building which by reason of its appearance suggests some old quarter of a city in the homeland. The psychological effect is tremendous.

The Italian styles, with their advantages for the development of the facades of buildings facing city streets, offer many opportunities when a structure is to be erected as the center of social work of any kind, and the utmost in the way of results may be had at the minimum of cost by the use of very simple materials in which the Italian styles may be successfully developed. A wise choice would indicate the use of this type of building, particularly when it might possess an added value for the purposes which the building is intended to serve.

Such were the conditions presented in the planning of the Bethlehem Chapel and Memorial House, on Bleeker street, New York. This is at the center of the Italian quarter below Washington square, where a foreign population has now completely filled a district which was occupied a few decades ago by people of English or French descent. Here in block after block of dismal tenements the Italian people are housed, with here and there a group of dwellings recently remodeled by real estate speculators to meet the urgent demand for homes and adapted to the needs of families of a social status quite different from that of the characteristic population.

The problem was to plan a building which by its appearance would attract and impress favorably the people for whose use it was meant, and to provide quarters for varied activities—a day nursery, many clubs and other social organizations—and also rooms for religious services, together with living quarters for a staff of residents and rest rooms and kitchen facilities for other workers who live elsewhere. The building includes provision for all this, so planned that many activities may be carried on without interference, each complete in itself.

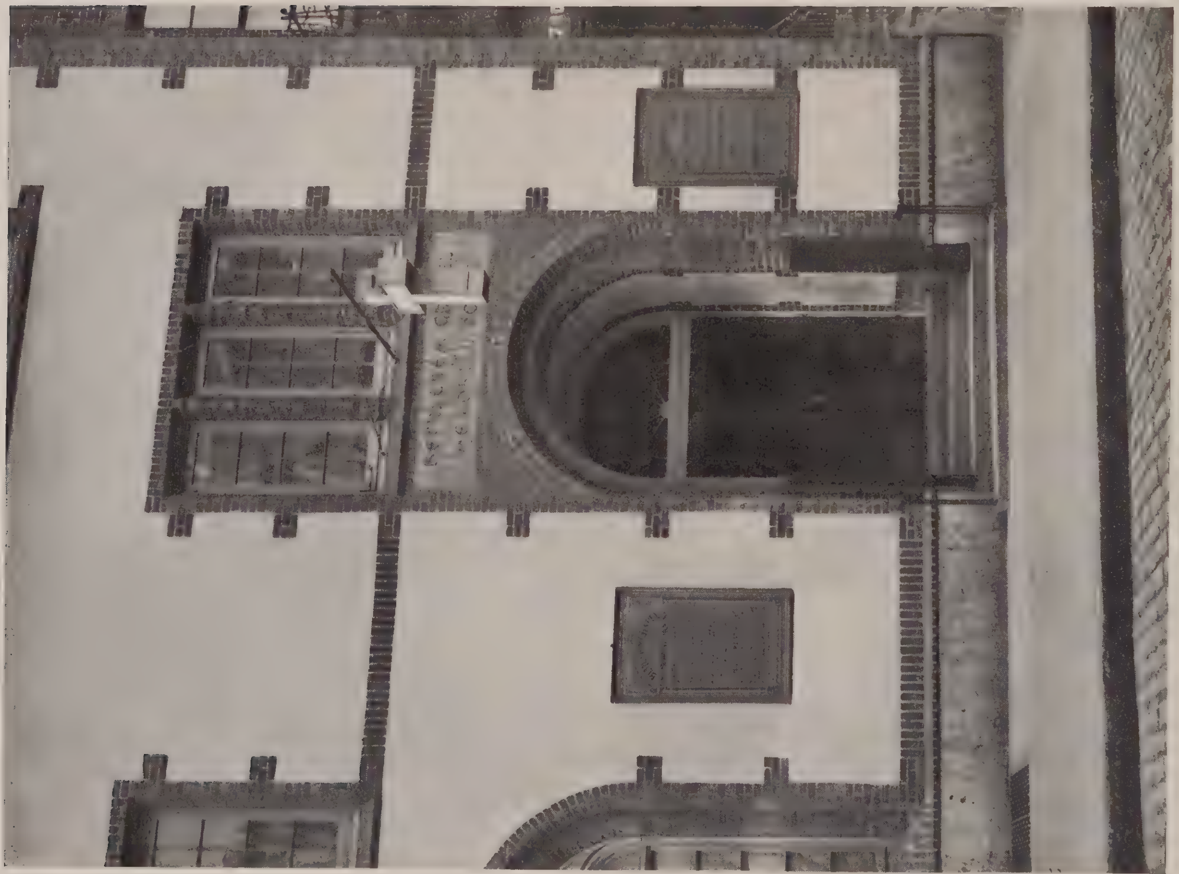
To the casual visitor walking along Bleeker street, the Memorial House with its bright colored facade and simple detail contrasts sharply with the unrelenting hardness of the neighboring buildings. There is a suggestion of ecclesiastical influence of Italian origin in the minor details of the street front, particularly in the muntins of the windows and the playfulness of a tile balustrade and a pergola surmounting the upper story. The stucco of the walls, of a pale pink displaying the trowel marks of the mason, has a warmth and quality of texture that is decidedly pleasing.

Inside, the building has been laid out with a view to affording highly efficient service. From the very simple vestibule the visitor enters the main or chapel floor, with one large room running the full depth of the plot, providing seating capacity for about 300. The major or central area of this room runs through two stories, either end being divided by a mezzanine or gallery. Beneath these galleries, on the same level with the main assembly room, provision is made for special meetings or classes, collapsible folding doors providing for isolation of the groups using these classrooms.

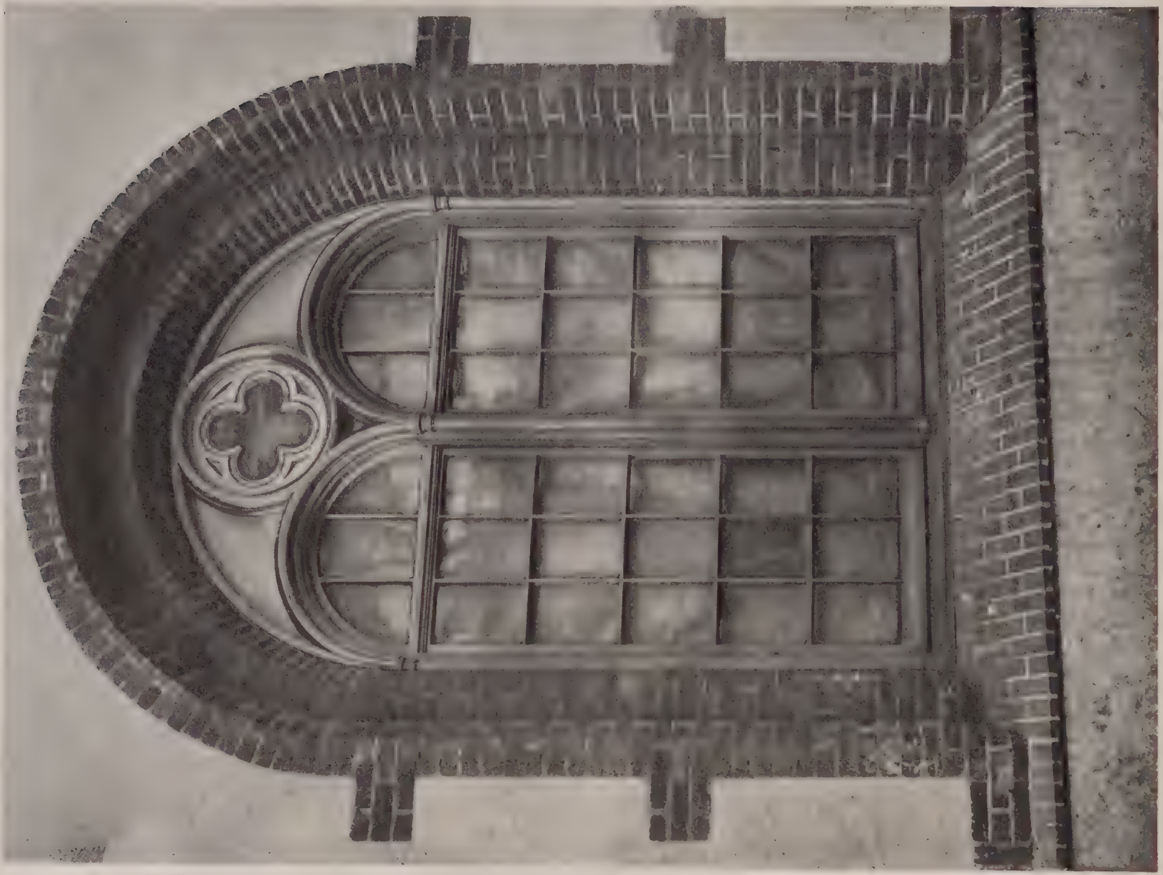
On the second floor is a nursery department, including a sleeping room 25 x 27 in size and a playroom 20 x 20, besides a diminutive toilet and bath, all to accommodate about 40 babies and small children. On the same floor are the nursery mother's office, a dining room for servants, a dining room for the little folks, a diet kitchen, laundry and three sleeping rooms for the staff. Most interesting of the rooms, from the viewpoint of service, is the dormitory or nursery for the infants who spend their days under the care of the mission mother. An experience not soon forgotten is a visit to the nursery on a weekday afternoon. In the twilight of the darkened room 30 or 40 tiny recumbent forms, rolled in blankets, slumber soundly on slatted cots.

The Chapel and Memorial House are designed to serve youths and girls of the neighborhood as well as the children of nursery age and grown-ups. With this in view, a gymnasium has been incorporated in the plans, located on the third floor, 26 x 40 in size. The remaining area on the same floor is given over to bedrooms for the employes and nurses and the superintendent's apartment.

The important lesson which this brief outline of the activities and workings of a modern social center conveys to the architect generally is the desirability of a broadening of viewpoint regarding buildings for modern social service requirements. He is hardly justified in expecting to profit by the opportunities which are rapidly coming forward in this field, unless he familiarizes himself with the developing science and sociology of welfare work, dealing with people in humble circumstances.



DETAIL OF ENTRANCE



DETAIL OF FIRST STORY WINDOW

BETHLEHEM CHAPEL AND MEMORIAL HOUSE, BLEEKER STREET, NEW YORK

GEORGE B. POST & SONS, ARCHITECTS

Plate Description

DETROIT GOLF CLUB, DETROIT. Plates 17–20. The opportunity for giving architectural character and expression which the designing and planning of a large country club presents has been made the most of by Albert Kahn, the architect of this large and rambling building. Its purpose demands that it afford every convenience and comfort for those interested in golf and the other out of door sports to which it is devoted, and also that it have spacious verandas so situated that at least one be shaded during the entire day, and several overlooking the golf links themselves. The floor plans show that every provision has been made for all this and also for affording to members and guests the utmost of service in the way of living rooms, reading and sitting rooms, grill and dining rooms.

The exterior walls and the chimneys of the building are of brick laid in a simple but tasteful bond, and shingles have been used for roofs and for covering the surfaces of certain gables. A large part of the attractiveness of the club is due to the care with which laying out the grounds and planting of shrubbery have been done.

FARM BUILDINGS OF WALTER DOUGLAS, ESQ., DOBBS FERRY, N. Y. Plates 21–23. During the past few years what might be called the architectural value of farm buildings of different kinds has been realized as never before. Separated and scattered over an estate they generally constitute a liability rather than an asset, but when combined into one structure or into a group of closely related buildings they acquire an importance which entitles them to considerable attention on the part of architects.

Such is the result in the case of the buildings, of which Alfred Hopkins is architect, shown upon these plates. All the departments necessary upon a large estate are so grouped or combined that each fulfills its appointed function while adding its share to the importance of the group as a whole. The walls of the buildings are of stone, whitewashed, and the low, spreading roofs which add to the character of the group are covered with slate.

SERVICE BUILDING, ESTATE OF WILLIAM V. KELLEY, ESQ., LAKE FOREST, ILL. Plates 24, 25. The tendency, in planning modern country estates, to group the auxiliary or service buildings and to clothe them with a garb which possesses distinct architectural character is also illustrated here, for in this structure, of which Howard Shaw is architect, are combined stable, cow house, silo, water tank, hay loft, garage and three separate and distinct sets of living quarters for employes.

Use of stucco for outer walls gives the structure a close relationship with other buildings upon the estate, and the necessity of there being a silo and a water tank probably suggested the placing of these two adjuncts close together and screening them with the graceful brick structure, which with its horizontal brick courses at intervals has much the appearance of a campanile from northern Italy.

CHAPEL AT COLGATE UNIVERSITY, HAMILTON, N. Y. Plates 26–28. Use as building material of stone, such as was used for some of the earlier university buildings, ties this newer structure in with its surroundings and makes for the harmony and unity which add so greatly to the dignity of a group of collegiate buildings. Rough stone has been used for the greater part of the building; the employment of cut stone of another kind for trimmings gives the variety of texture and color which walls of stone sometimes lack, and the gracefully designed belfry or cupola is of wood painted white. The entire exterior suggests the early meeting houses of the Dutch settlers in certain parts of New Jersey and New York.

True to the early meeting house prototype, the interior has the customary narrow gallery along each side, suggested from without by the arrangement of the windows, and a deeper gallery across the west end of the church. The floor of the auditorium proper slopes slightly toward the pulpit end. Interior trim is of wood painted white with mahogany used for stair rails and for the trim of pews. The fluted wooden pilasters support a cornice of plaster. The architects, Harding & Seaver, have been successful in imparting to the building an architectural consistency which is rare among chapels of collegiate institutions.

ST. CECILIA'S PRIORY, ENGLEWOOD, N. J. Plates 29–31. The excellent design of this structure, of which Raphael Hume is architect, suggests at once its use as a convent for a community of women. The stone walls gain in dignity and in solidity of appearance by the use of coped gables, the judicious grouping of openings such as doors and windows wherever such grouping was possible, and by the use of broad expanses of high pitched, slate covered roof not unduly broken up by the long row of dormer windows necessary for lighting the bedrooms of the upper story of the building.

Floor plans show an excellent arrangement which is in accord with traditions which for centuries have governed the planning of monastic buildings. The parlors or reception rooms to which the outside world has access are cut off from the "cloister" or quarters of the community; the arrangement of the refectory or dining room is what would be expected in a convent, while the placing of the chapel in its present position makes possible the fulfilling of the rule (sometimes ignored) that no rooms of any kind be placed over the chapel. The dignity of the building is enhanced by being placed endwise to the street and by the excellent use of hedges and other shrubbery.

EDITORIAL COMMENT

WILL ARCHITECTS GRASP PRESENT OPPORTUNITY?

STATISTICS of the building industry indicate that 1923 will see a greater volume of building construction than any year previously recorded. This unusual program of building offers a singular opportunity for architects because statistics also indicate that a large proportion of contemplated building will be of important structures ordinarily involving due architectural consideration. The opportunity exists to increase greatly the number of worthy architectural buildings in this country and to make this period of large building one of steady advancement in the standards of architectural design. The fulfillment of this depends upon the architectural profession, and while there are great numbers of talented men in the profession and new lights always coming forward,—an ample group to meet the demand for architects,—there is reason to ask if the profession will accomplish all that is possible.

The architectural profession of all the professions can generally be said to represent the most highly developed professional viewpoint; architects individually and collectively are first and always interested in the advancement of architecture—an art; the advancement of their profession as an economic factor and a means of livelihood is entirely secondary. This is most praiseworthy, yet as modern civilization is constituted the progress of architecture cannot be secured without first developing the profession so that opportunities can be fully grasped. It is because of our conviction that the profession fails in this latter respect we question its ability to accomplish all possible in the era just ahead.

The public that builds is not learned in architecture; it is not able to appreciate the sometimes rather fine distinctions that separate good from bad; it distinguishes one architect from another solely by reputation, not by means of a critical appraisal of their respective work. Architecture to the public is building (when it is not thought of as mere decoration and an extravagant luxury); the architect is a man to whom the planning and execution of building is entrusted. Unfortunately for the profession and for architecture too, architects often fail to realize the manner in which the public views them. They have thus made an opportunity for the functioning of another group which in the main offers to perform all that the architect does, yet which for definite business reasons elects to call its work engineering and not architecture. Is it not understandable, therefore, that in many instances there should be confusion in the minds of those projecting a building over the terms "architect" and "engineer," and that often the engineer is selected for the work particularly because he has dwelt on the things he *won't* do—the very things that tradition says the architect *will* do?

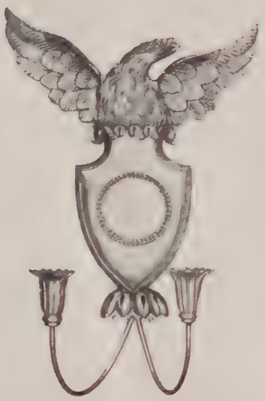
Some view this incursion of the engineer into the field of building as a factor undermining the practice of architecture; we have ourselves called attention to it more than once in these pages, yet we are inclined to see some good in it for the profession, if the presence of the engineer will serve to emphasize the need of architects' stressing and improving those points of their service that are economic in nature. The engineer will never be able to display the creative ability of the architect, but he has sensed the architect's weak points and has unquestionably won a place for himself in the business world because he has supplied service where the architect is deficient. Let this be considered a service to the architectural profession as well; the weak points have been singled out, and there remains nothing to do but correct them and profit by the example the engineers have set.

The engineer has developed another feature in his service to the building public—that of salesmanship. This is a very important factor in modern business, and from its rather crude beginning it has acquired a certain unwritten code of ethics which places it now in a near-professional light. Architects have held aloof from it because they view it largely as self-advertising, yet in order to execute their commissions they often unconsciously employ salesmanship which is nothing more than the ability to persuade others to accept one's views.

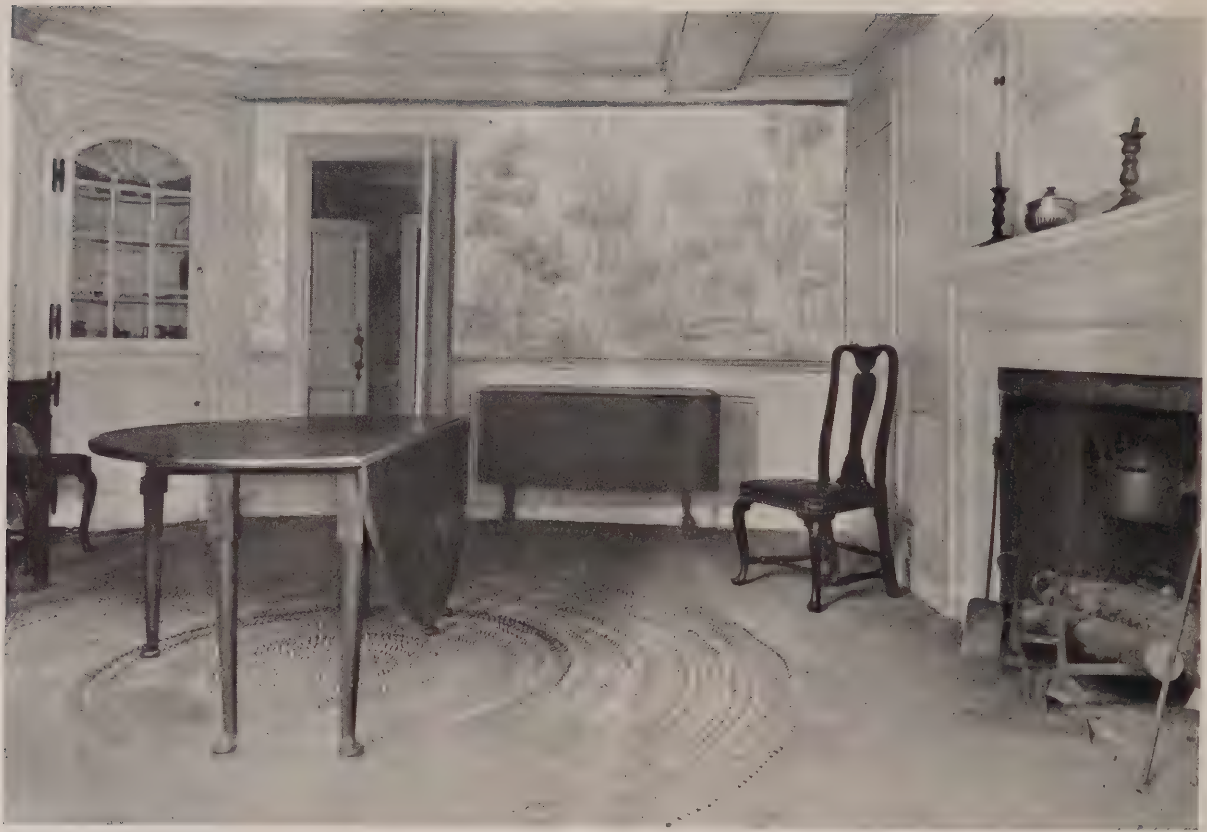
In the sense of an aid to securing commissions it should be only dignified publicity. There is nothing unethical in bringing one's work and one's ability to give service to the attention of one contemplating building and asking consideration on its merit. It is not incumbent on the architect to point out the merit of his work; a suggestion that inquiries be made of past clients is entirely sufficient. In commercial and investment building, and this constitutes a very large portion of the architect's sphere of operation, such a direct procedure is understood and respected, whereas the theory that the buyer will search out the seller, which is entertained by many architects, is given little credence.

Group effort of architects through well studied publicity should be made to counteract the prejudice that many people hold in regard to extravagance, inefficiency and lack of appreciation of business problems on the part of architects. Similarly, the functions of the architect should be properly explained to the public. It should always be kept in mind that publicity is not sought for the profession but for the utilization of architects in meeting the needs of the building public.

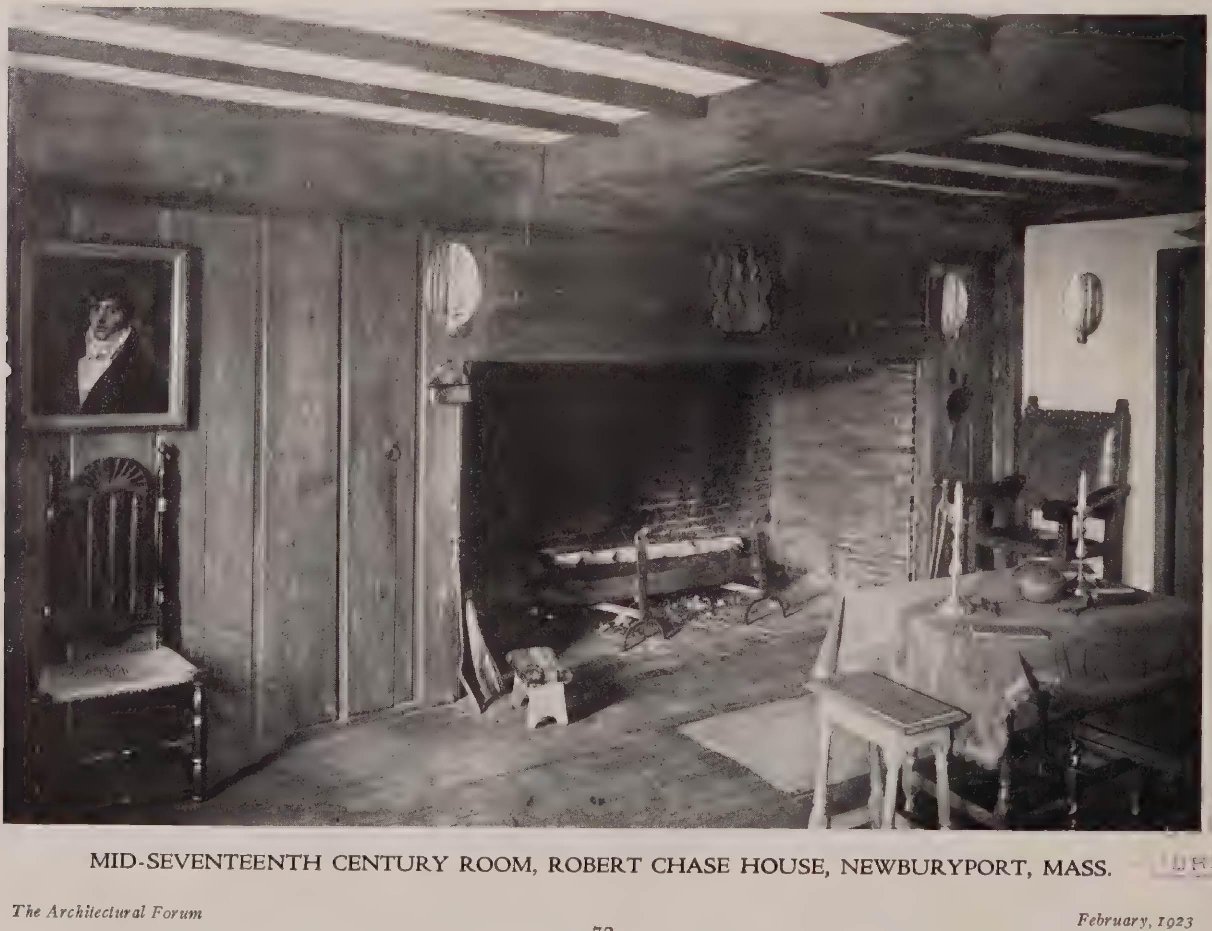
DECORATION *and* FURNITURE



A DEPARTMENT
DEVOTED TO THE VARIED
PROFESSIONAL & DESIGN INTERESTS
WITH SPECIAL REFERENCE TO
AVAILABLE MATERIALS



EARLY EIGHTEENTH CENTURY AMERICAN INTERIOR WITH TYPICAL FURNISHINGS



MID-SEVENTEENTH CENTURY ROOM, ROBERT CHASE HOUSE, NEWBURYPORT, MASS.

Eighteenth Century American Furniture and Craftsmanship

By EDWIN J. HIPKISS

Keeper, Department of Western Art, Museum of Fine Arts, Boston

Drawings by the Author

THE eighteenth century seems to have had diversity of taste within a unity of style. The architecture of our Atlantic seaboard has been rightly called American renaissance, for it was the last small bloom from roots of Italian origin after four centuries of transplanting and adaptation. The sixteenth century palace of Rome had become the White-Pingree house of Salem.

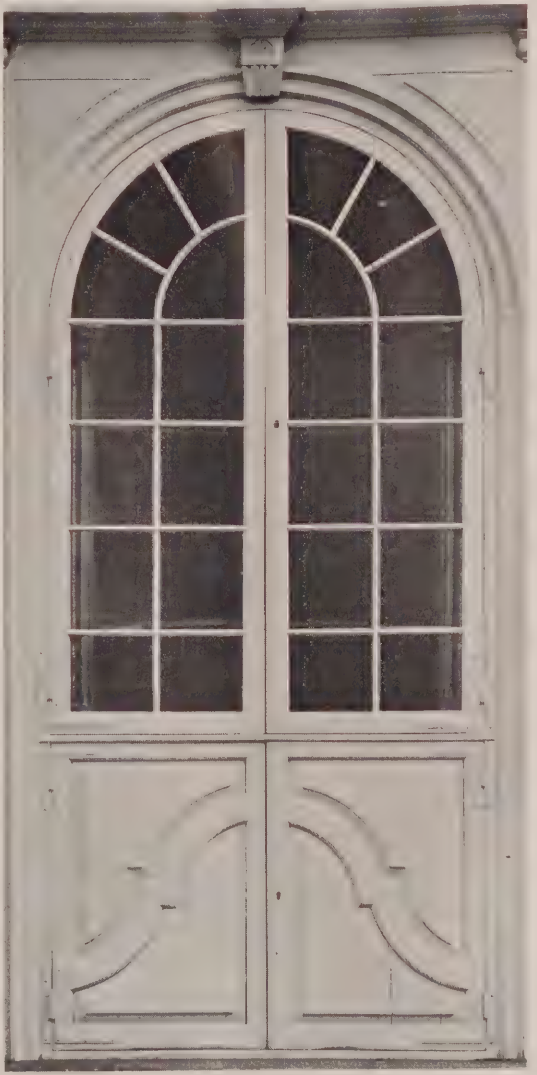
An accepted style, freely expressed, from Maine to South Carolina, held in check the pursuit of passing vagaries and produced good works, modest enough, but appropriate, diverse and modern in their time. Strangely enough, the simple furniture of native woods, walnut, maple, beech, birch, applewood and pine, had the directness, simplicity and vigorous spirit of sixteenth century Italy in some measure. Most of it had architectonic quality. The men of the eighteenth century obviously held to the idea that, "you cannot make a purse out of a —," or rather, you can best make a purse after a good model. And do we not realize it, too, if we honor past achievement? "So shall we bring out of our treasuries new things and old." Sir Joshua Reynolds said to his students at the Royal Academy: "The more extensive your acquaintance is with the works of those who have excelled, the more extensive will be your power of invention—and what may appear still more like a paradox, *the more original will be your conceptions.*"

That had to do with painting, a "fine art," but other arts have their fine traditions. A group of Frenchmen skilled in a racial art, combined their efforts, with crayon, soldering iron, nippers, bits of lead and colored glass, and made one of the glories of France,—the stained glass windows of Chartres. The masters of the Italian renaissance did not stand aloof when furniture came along as part of the year's work.

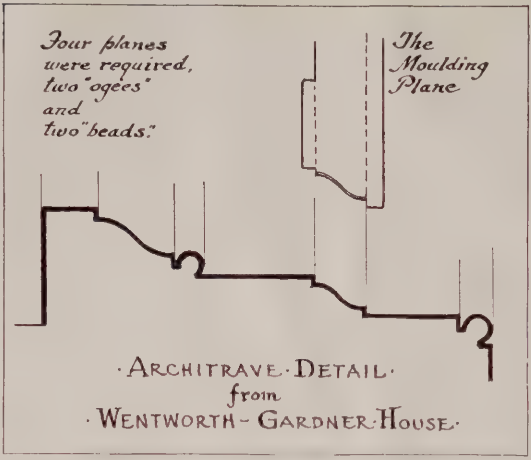
In the eighteenth century the worker in wood had an equipment of tools now seldom seen; he had in his hands what amounted to a keyboard of forms—it was a set of moulding planes. The forms they cut were based on the prevailing idea of style, and the planes were made in graduated sizes, thus making almost endless combinations possible, always *in style.* An architrave from the Wentworth-Gardner house will serve to illustrate their application. Proportions and details were first decided upon as a part of the whole work, then moulding planes were selected which would do their part in the design. The same principle was applied to an elaborate cornice. Design and execution were so closely related and the same practice was so widespread, that an impossible form like that shown in the accompanying profile drawing could hardly have happened—or even have been tolerated. This specimen was taken at random from a current catalog of what passes as "colonial" finish. It is said to be "kept in stock," but the land is deluged with it.

What were the old methods of finishing? A cabinet maker of New York recently had this to say after an experience of 28 years in the restoration of old furniture: "In the eighteenth century fine furniture was treated in one of two ways. It was either made without finish and was cleaned with water, soap and sand, or it was given a quickly absorbed coat of shellac and was then waxed over again and again. Mahogany and maple were never polished; the wood received its soft sheen through oft-repeated oiling and rubbing." The writer uses an old recipe calling for double boiled linseed oil, turpentine and vinegar in equal parts. It is rubbed on with vigor and rubbed off with care.

Maple is a wood of fine qualities, and furniture of deep, rich tones, suggesting the brown tones of old leather bindings, is coming into a wider appreciation. The old color can be approximated by proper



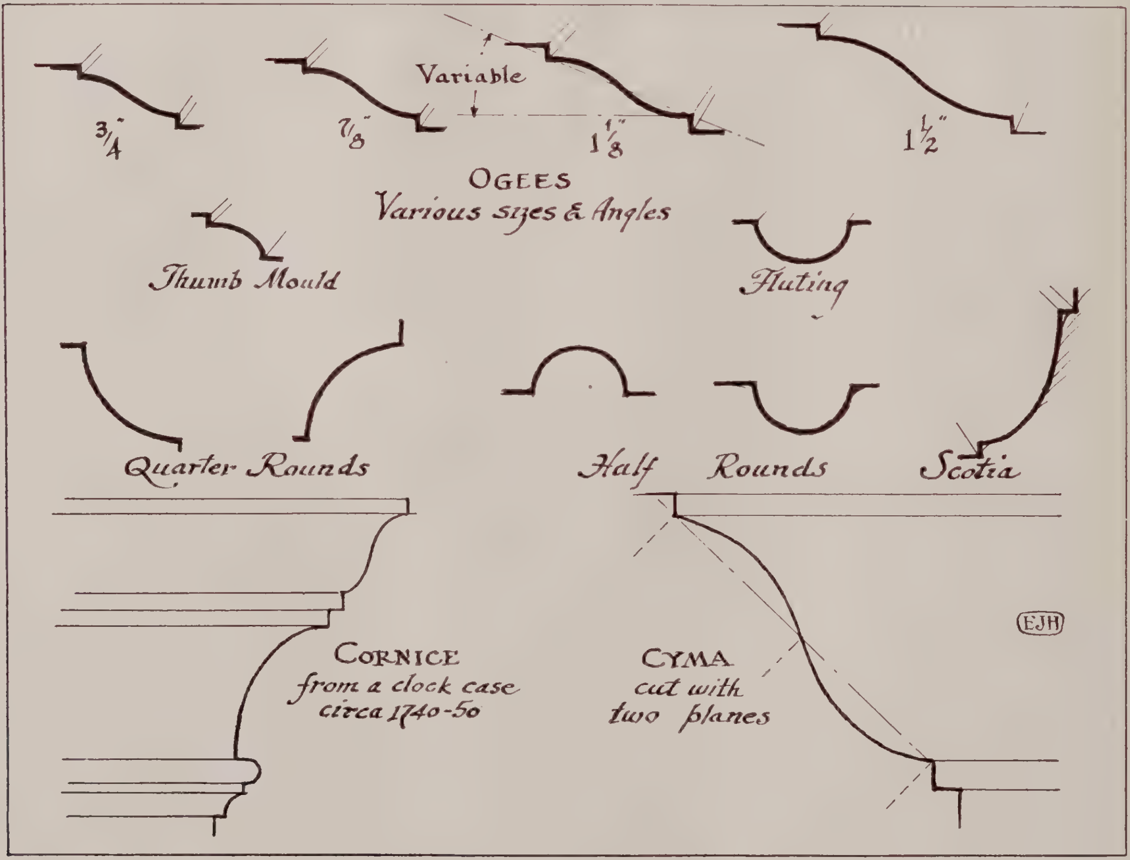
Eighteenth Century Cupboard in Metropolitan Museum of Art finishing, but of course time favors the old pieces in their beauty of surface. Many of us come to the point where we must aim for some consistent scheme of furnishings, not for a client of great wealth but for a scheme for our own needs, and one "within the appropriation." Many of us have studied the works of sixteenth century Italy or eighteenth century France with keen interest and pleasure, to find in the end that they are magnificent and that we are not princes. Early American chests, tables, chairs, beds, dressers, cupboards, stools and benches made of maple, walnut or even pine offer types that can be charming in form and color. If they happen also to be appropriate, who can have more?


Four planes were required, two "ogees" and two "beads."
The Moulding Plane
·ARCHITRAVE·DETAIL·
from
·WENTWORTH-GARDNER·HOUSE·

Typical Interior Architrave Detail

Early American Moulding Plane

The native Windsor chair is much finer in design and quality than its English prototype. A good eighteenth century Windsor has many interesting points and well illustrates the ways of the skilled workman who takes pains, and pleasure, in making things come right. It seems strange at first thought that these chairs should have three kinds of wood in their makeup. They were maple, pine, and hickory or oak, all pulled together in tone by the use of oil or painted in one color. They have lightness with strength and a sprung-bow-like quality in the backs worth analyzing. The spindles and bows were of hickory or oak, and the spindles were joined to the bows with fox-tail wedges. The seat was of one piece of white pine, light though sufficiently thick to allow a "saddle" seat for comfort. The legs and

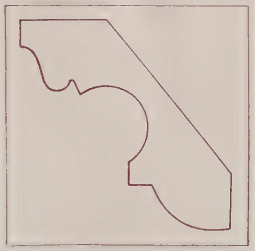


Moulding Forms of the Mid-Eighteenth Century in America stretchers were usually of hard maple, wear-resistant but well adapted to turning in the lathe. All joints were wedged.

Second Floor Hall Door
Wentworth-Gardner House, Portsmouth, N. H.

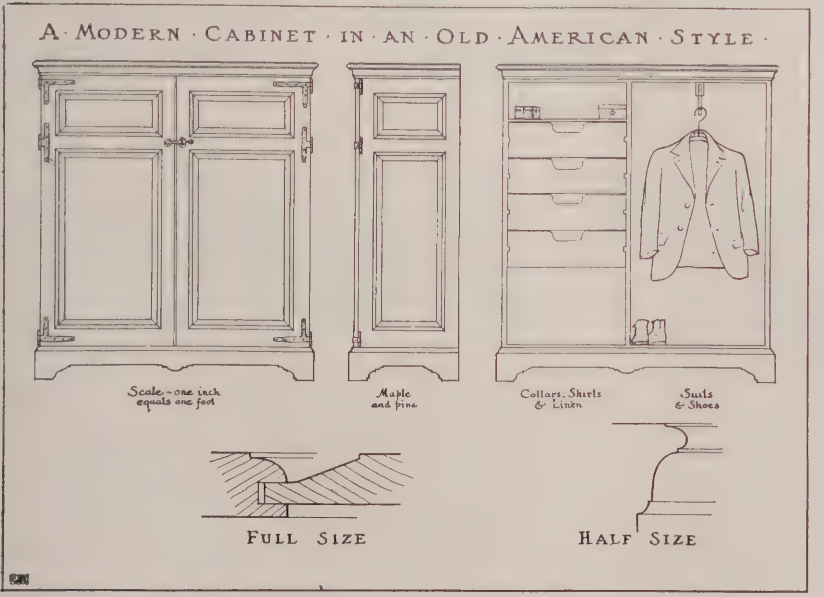
The sketch given here shows typical door panel construction. There was economy in parts; mortised and tenoned joints; no metal, and the panel was held between rails and stiles free to expand laterally, or "with the grain." Old doors of pine are still in service after 150 years of use. The doors in the Wentworth-Gardner house will serve as few among many examples; they are straight and true and but 1⅛ inches thick. The same reasoned construction was used in furniture with many variations.

Some Experiments, or Theory Plus Practice. The armchair in the style of Charles II, shown in the illustration, is nothing more than a copy made "for the fun of it." Three local workmen, a carver, a turner and a joiner, worked with the owner and seemed to enjoy the opportunity of doing a special piece of work. Their charges and the cost of the wood amounted to little enough. The wood, incidentally, is old walnut and came from a house formerly on Beacon Hill, Boston. The only conclusion reached as a result of this experiment, and several others, is that a lively interest on the part of skilled workmen does exist and should be encouraged. The chair is plainly modern and will mislead no one who knows old furniture. The work was done without thought of being either "artistic" or artful. The tavern table was designed with elements of several old tables in mind and was made by two local workmen. The frame is of maple and the top is of pine in one piece with maple cleats on the ends to protect the end wood. It was turned over to its owner "in the white," and was then given a wash of chemical solution, to obtain the brown tone desired, followed by one of vinegar to neutralize the acid. Oil finish was rubbed in finally. It approaches the work of the eighteenth century in surface and color, but it is frankly modern.

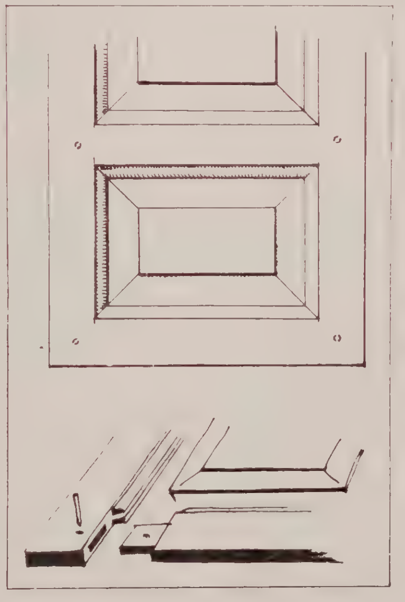


Modern Stock "Colonial" Moulding

The drawing of a wardrobe cabinet is merely an attempt at solving a modern problem in an old manner. It was designed to go in a certain room and to take its place with some old pieces. The intention is to paint it sage green with mouldings in low toned vermilion; all surfaces are to be rubbed with pumice and oil. Variations and improvements will suggest themselves to other designers at once, and the more free practitioners there are, the greater chance


A · Modern · Cabinet · in · an · Old · American · Style ·
Scale – one inch equals one foot
Maple and pine
Collars, Shirts & Linen
Suits & Shoes
Full Size
Half Size

Details of Cabinet in Early American Style



Details of Colonial Door

Early American Painted Chest

for varied interest and perfection. We sometimes are told, in tones of resignation, that we live in an industrial, a manufacturing age, as though fine achievement in the crafts were at an end—a closed book. We need only concern ourselves about standards, and the right means will take care of itself. Fine works get done when there is eagerness for fine work.

What about machinery? May we not look to machinery hopefully? Machines have always been used; the lathe, the drill and the potter's wheel are ancient examples. The artisan has no quarrel with a helpful machine; he has a legitimate quarrel with a machine as a master, and he has a quarrel with the methods of mechanical production. The mechanical ideal sets going a body of men under a military regime (on a forced march usually) in a drive on minimum cost and maximum quantity. The workers march in a treadmill of part operations endlessly repeated.

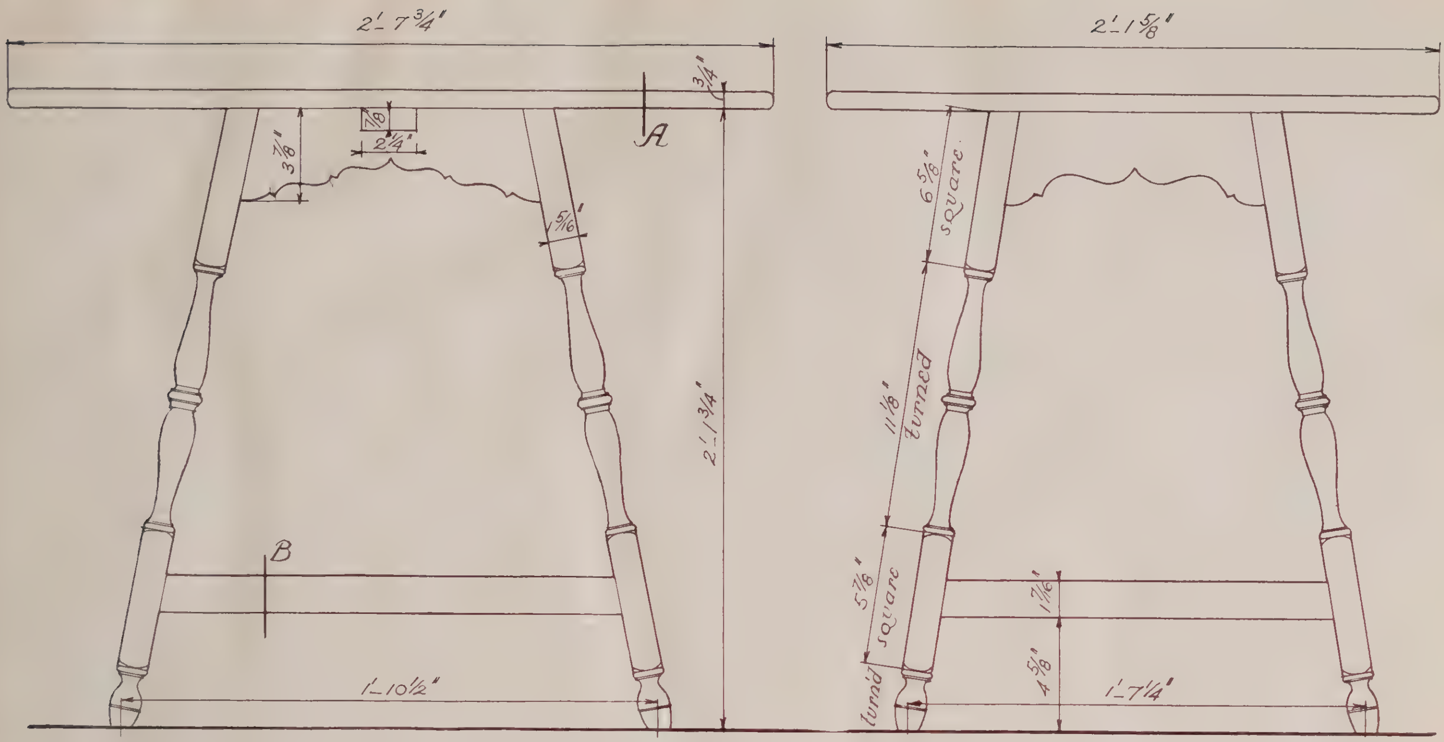
During the nineteenth century mechanical production almost wiped out many worthy and needed outlets of human skill. And we now hear much of the use of museum examples of craftsmanship in domestic art for the "beautifying" of manufactures. That manufacture should have a semblance of art is no doubt desirable, but that is only a compromise. Artisanship *at its best* is personal;

Modern Reproductions of Early American Furniture

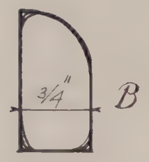
The illustrations above and below show modern pieces of furniture that have been made by the collaboration of local workmen under the guidance of the author. They observe the niceties of design, craftsmanship and finish that characterize original pieces.

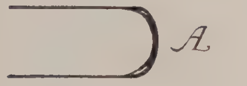
Early American Table Suggesting Italian Feeling

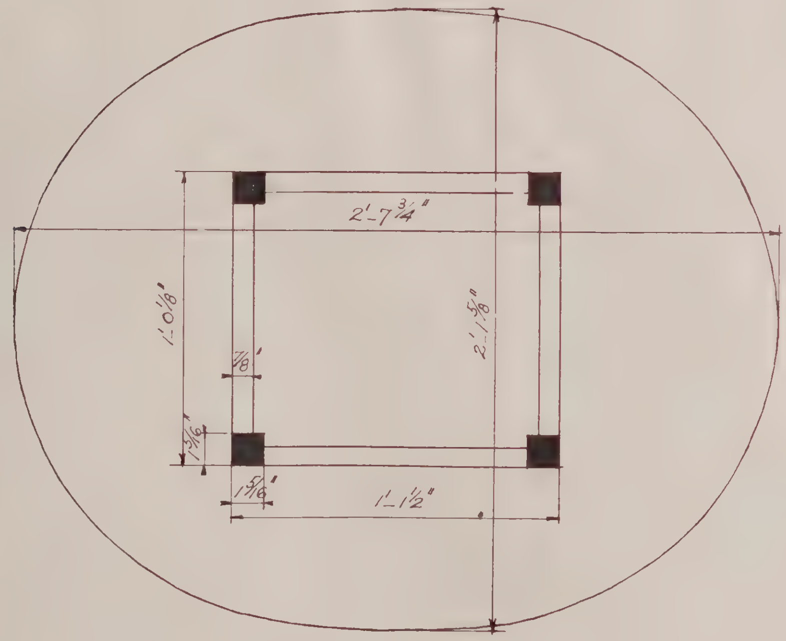
Tavern Table Designed by the Author



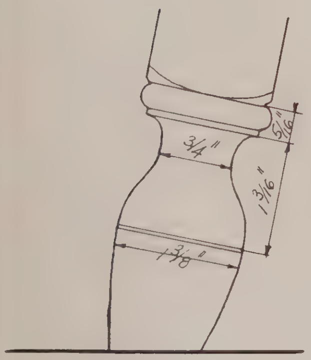
Elevations





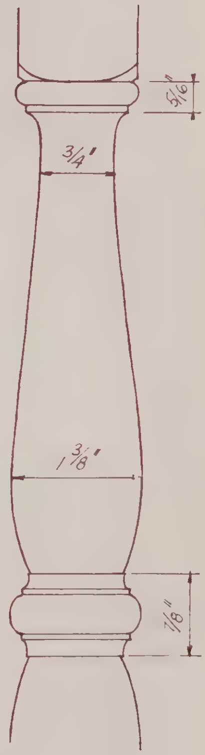


Plan of Table Top
(Looking Up)
scale 1" = 1'-0"



Detail of Foot

Details drawn to one-half full size



Detail of Leg

AMERICAN MAPLE TABLE

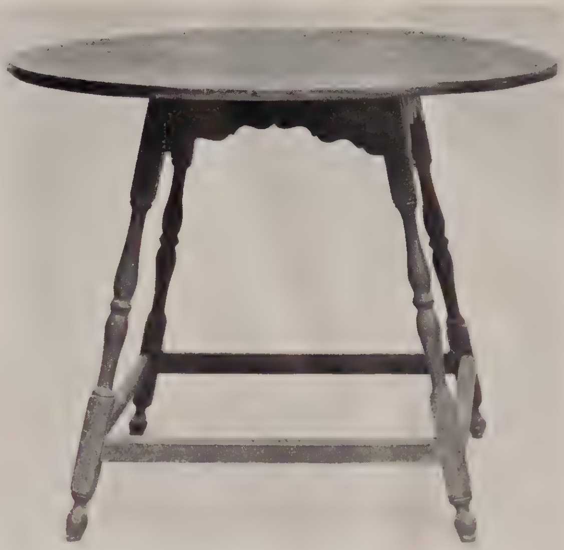
1700 – 1710

from the Metropolitan Museum of Art
NEW YORK CITY

MEASURED DRAWING BY VERNA COOK SALOMONSKY it represents individual skill, a grown man's pleasure and satisfaction in work that has a beginning, a middle and an end. Mechanical production has nothing to do with such altruism. Quantity production is economic war. And although the mass attack will continue to do the world's "fetching and carrying" better than it has ever been done before, let us recognize the fact that the more spirited youth of America looks forward to a finer service than being either infantrymen or officers in the victories of quantity, and then we may have fine artisanship added unto us.

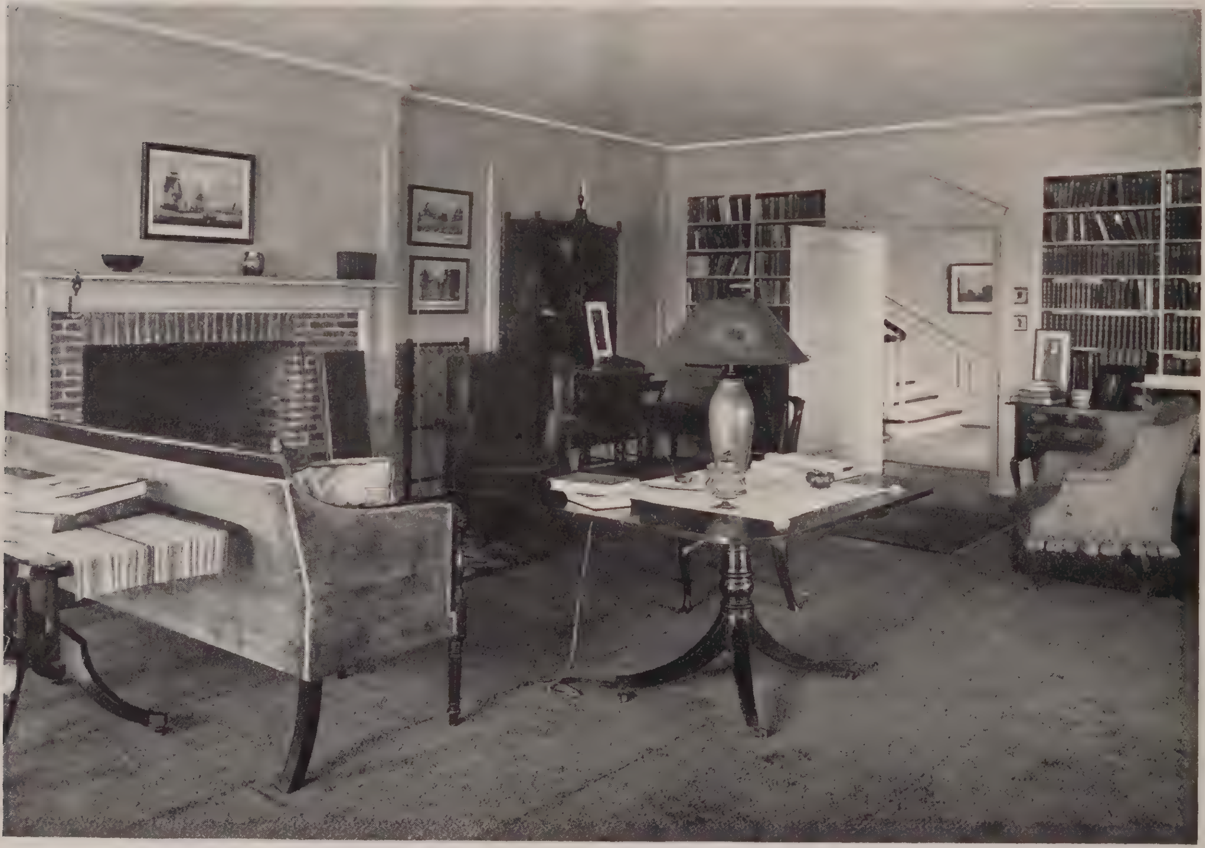
It will be plain enough that these graphic studies are of elementary character in relation to fine architectural detail. But, if it be true that national or racial art thrives only when there is a general consciousness of beauty, these elementary considerations are much needed. The basic principles—to observe intelligently, to draw well, to execute skillfully—are little understood today generally. American traditions, of 150 or 200 years ago, can point a way, for it may be seen by the observant that the great mass of current work (in which were once minor fine arts) is as cork and paper flowers to the native wood and native wit seen in museum collections of our early American arts.

"Good workmanship is essential always, but the right motive is what gives to good workmanship its life and interest."



Early Eighteenth Century Tavern Table in Maple
Measured Drawing from Original in Metropolitan Museum of Art on preceding page

INTEREST in American architecture has largely been centered in the work extant in the principal towns along the Atlantic coast. There is much, however, to be learned of special value today from study of the simpler examples that may still be hunted out in the lesser known towns, and the thought suggests pleasant summer holidays.—Editor.



Living Room in Country House at Greenwich, Conn.
Suggests quaint character of early eighteenth century American rooms
John Russell Pope, Architect

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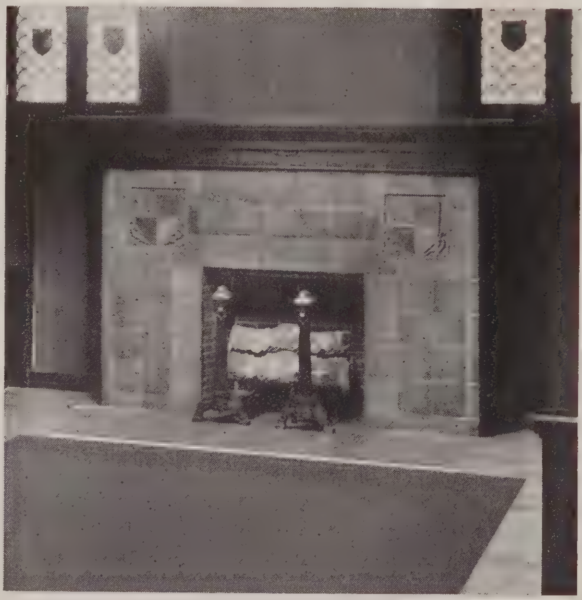

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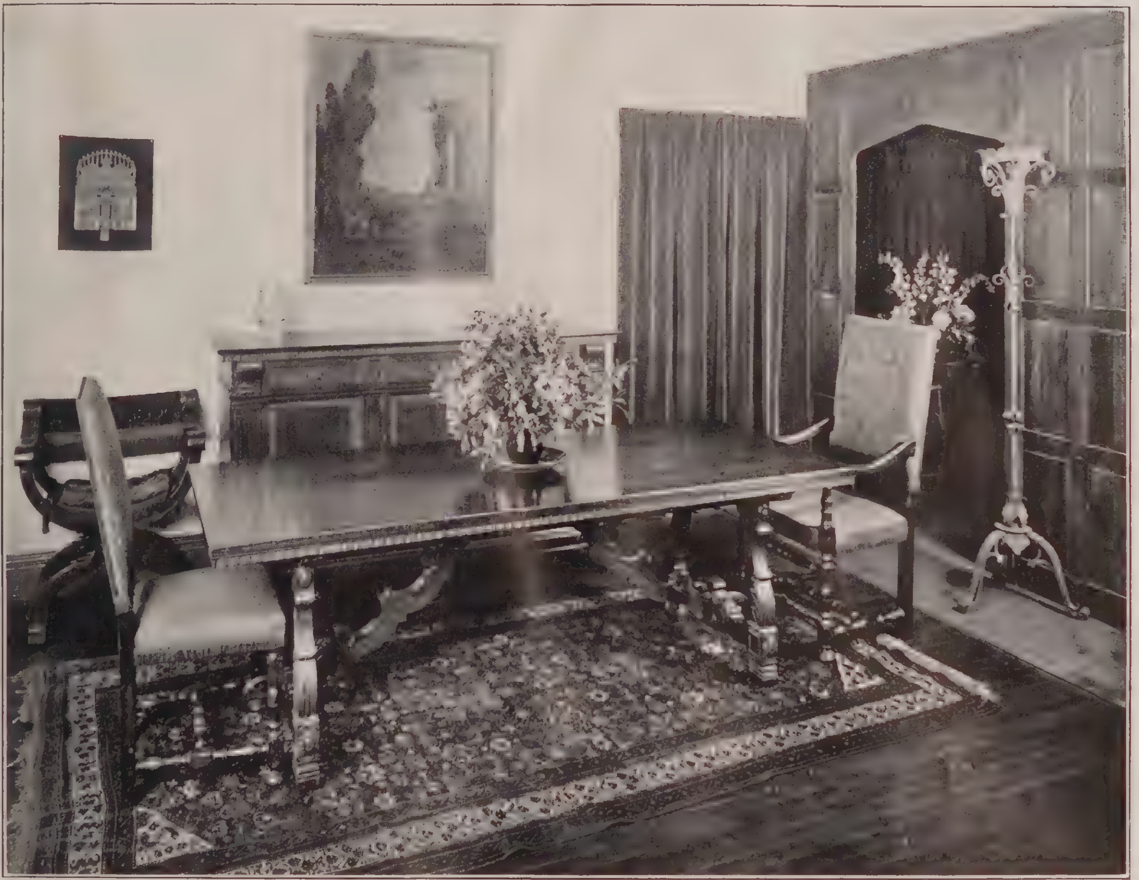
KENSINGTON FURNITURE



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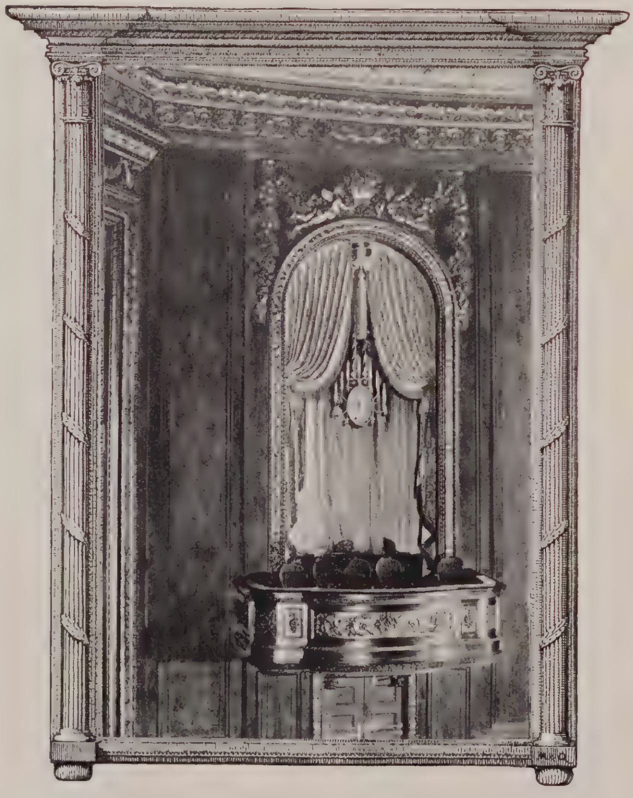

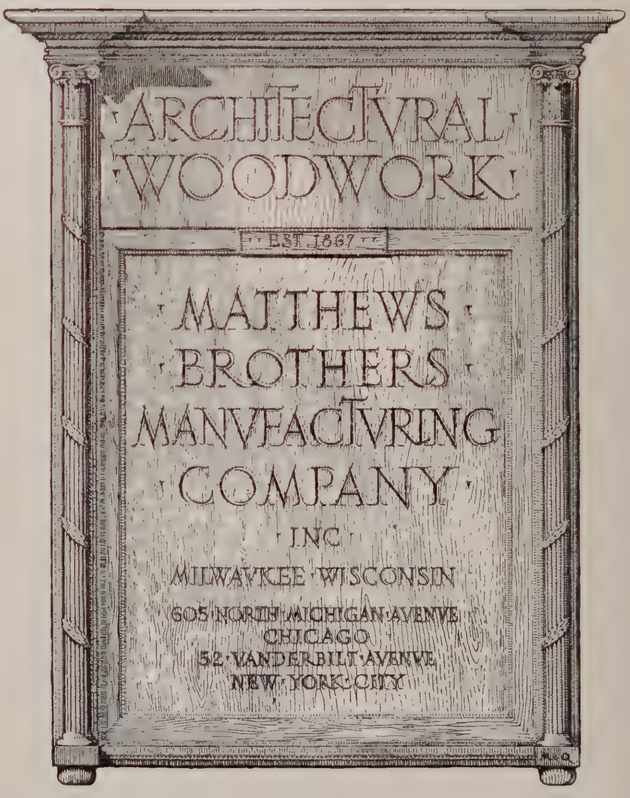

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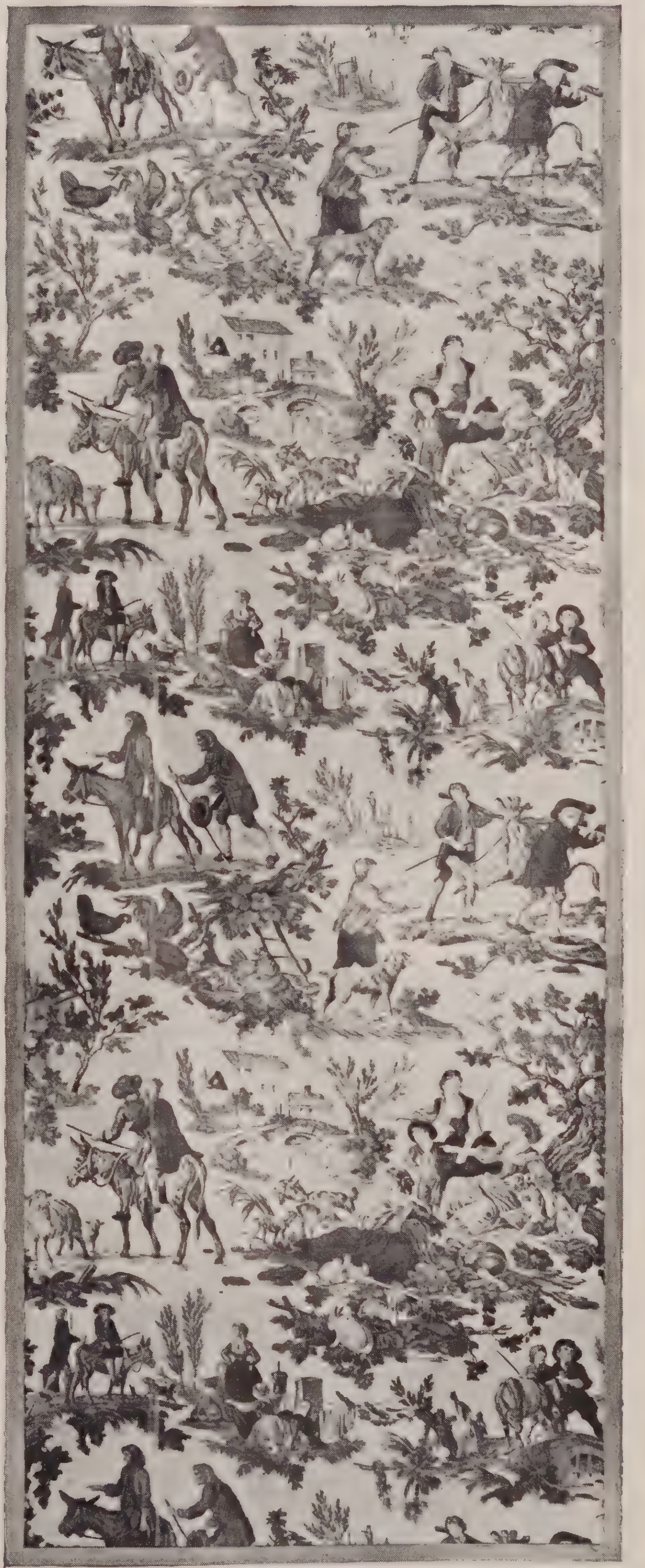

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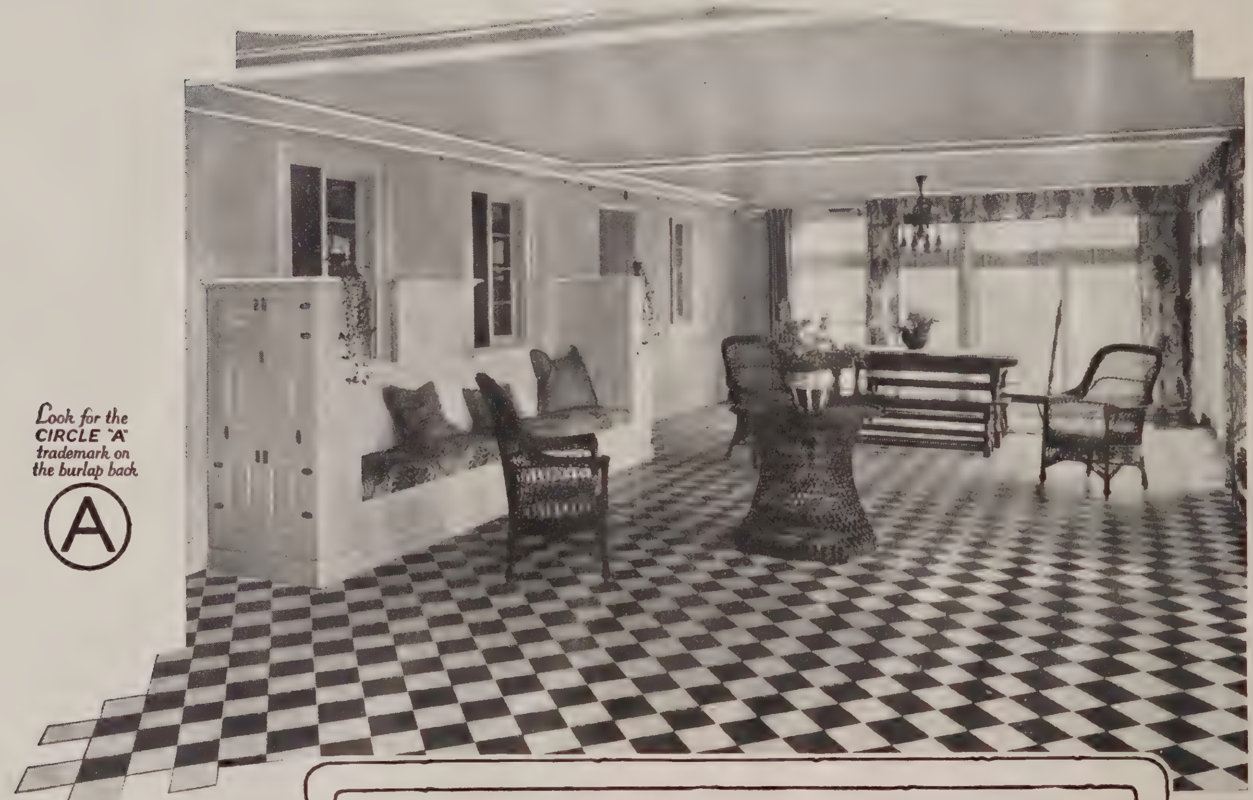

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How to Lay Linoleum on Concrete
How to Wax Plain and Inlaid Linoleum
How to Care for Cork Carpet

For Specifications, see Sweet's Seventeenth Edition, pages 442-447

The Charm of a Modern "Built-in" Linoleum Floor

MUCH of the charm of this delightful sun parlor in the home of the Hon. E. E. Beidleman, former Lieutenant-Governor of Pennsylvania, is due to the floor of six-inch black and white tile inlaid linoleum.

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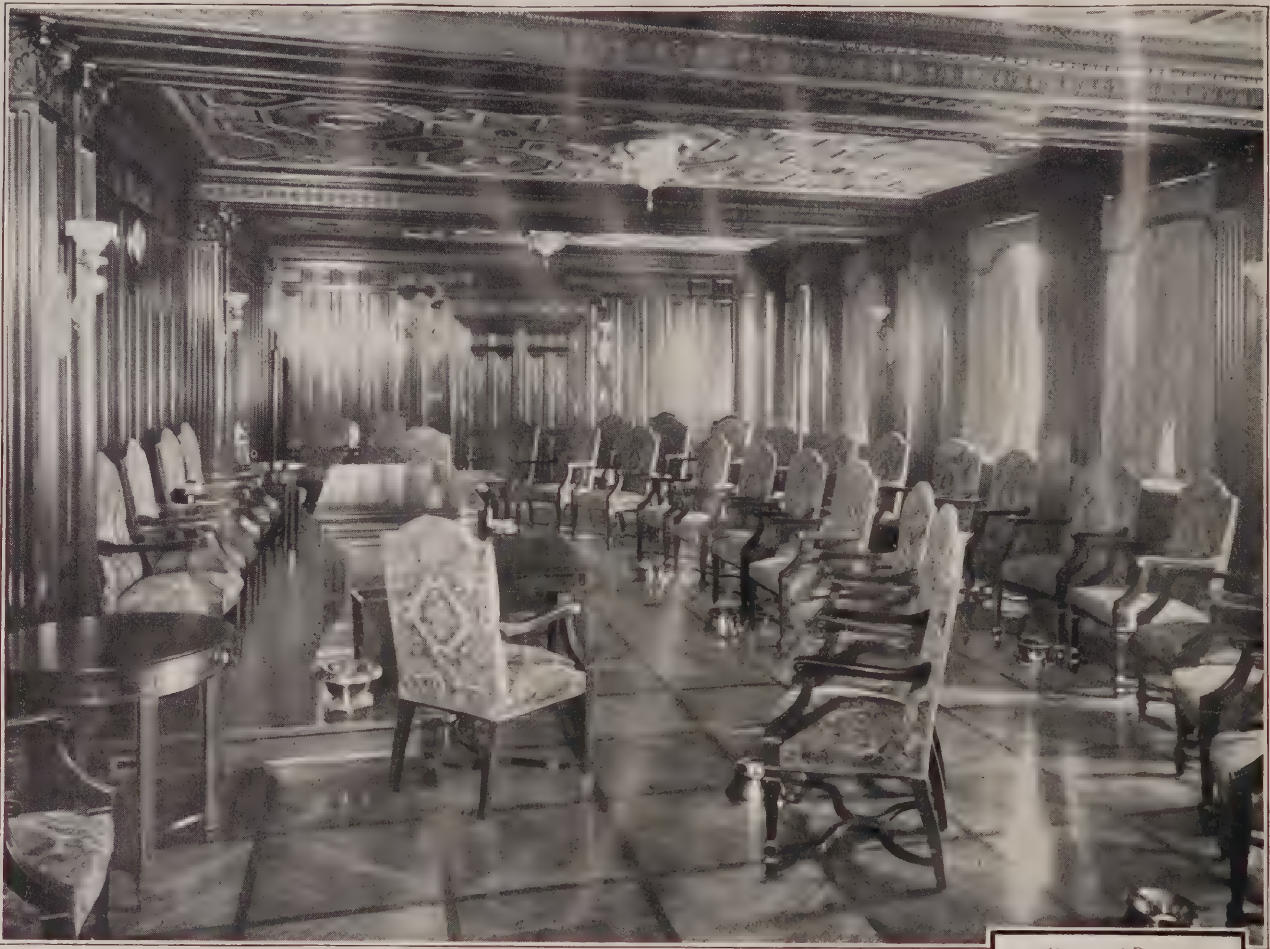

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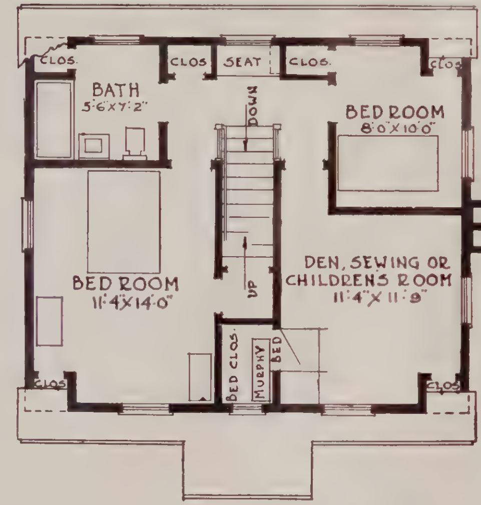

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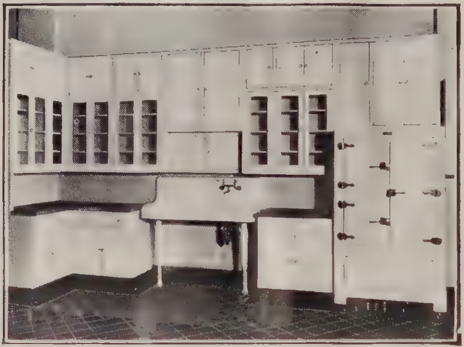

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For complete information see page 2124, Sweet's 1922 Catalog

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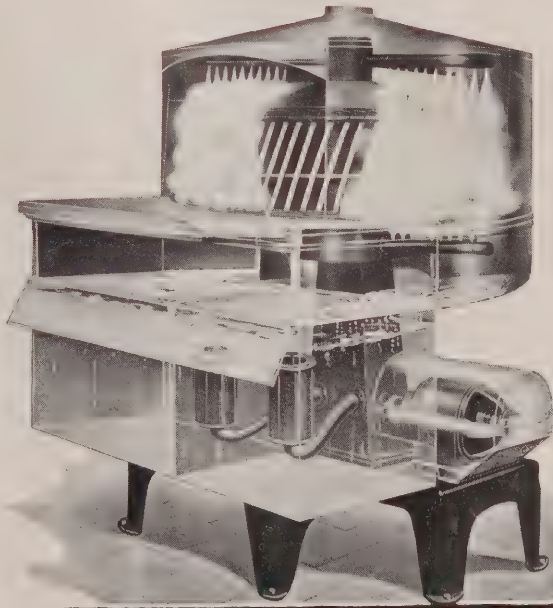

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SERVICE SECTION
of THE ARCHITECTURAL FORUM

Information on economic aspects of construction and direct service for architects on subjects allied to building, through members of THE FORUM Consultation Committee

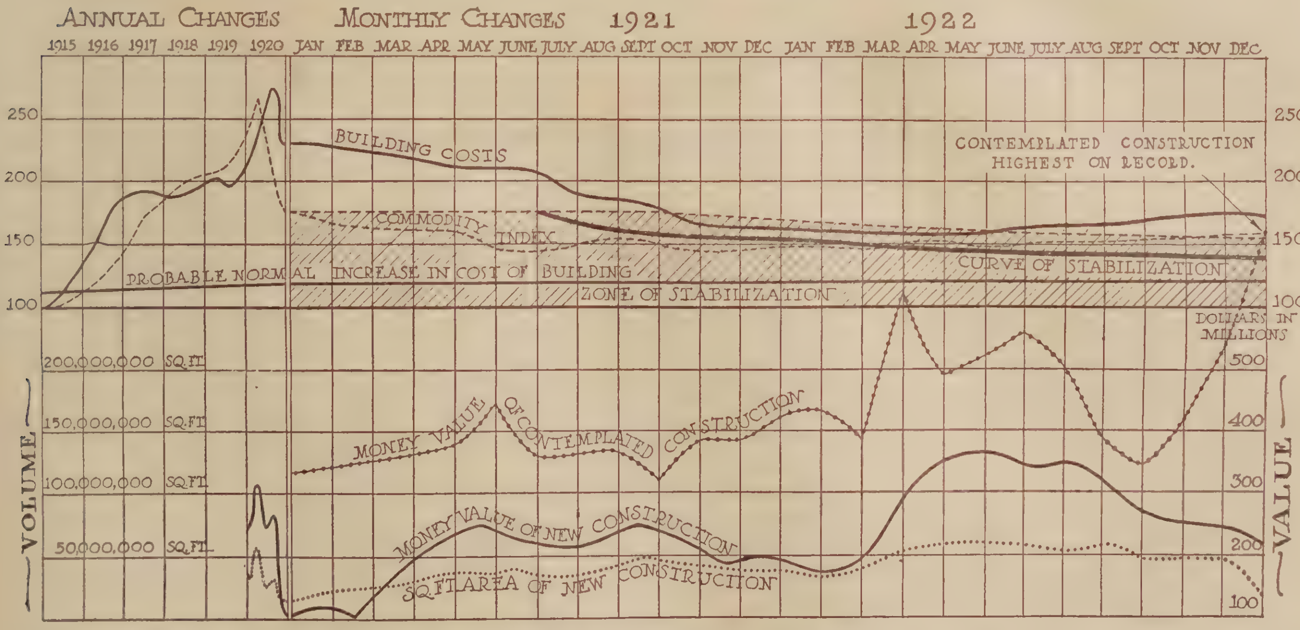
The Building Situation

AT the present writing the period of seasonal decline in building activity is nearing its close, and every indication points to renewed activity for 1923. In December and January the filing of plans has been unusually heavy in volume, and it appears that the building public is preparing for a greater investment in this field than ever before recorded. In the January issue of THE FORUM a completed survey of activity in 1922 and forecast for 1923 was presented, and reports from various channels through different sections of the country would seem to assure the approach of another great wave of construction activity. There can be no question that this volume of business is favorable to architects, because in each building classification the proposed types are of better design and a more substantial nature, involving more definitely than ever the use of good architectural service.

A discussion of the trend of building costs will be found on the following page, but it is interesting to note that building material manufacturers are forcing production in view of the expected demand, and that while the shortage of freight cars still proves to be a serious impediment confronting not only the building industry but all industries of the country, it is anticipated that by the beginning of the building season the rail situation will be much better.

The labor situation in the building industries shows no violent condition of unrest and will undoubtedly function under the law of supply and demand, as it always has and probably always will. In those districts where active building is anticipated it will be necessary to figure high labor costs, although the production per man is unquestionably much greater than during the hectic period of 1920.

An analysis of the chart below shows a sound falling off of an amount of building in December, due primarily to seasonal conditions, but it also indicates a continuing great increase in the amount of construction for which plans have been filed.

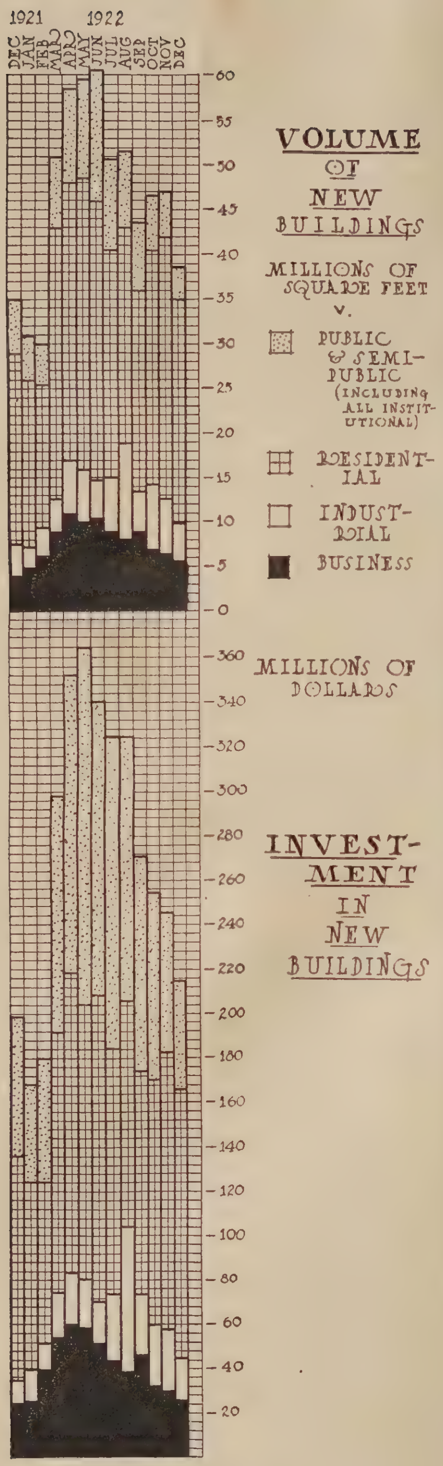


THIS chart is presented monthly with trend lines extended to the most recent date of available information. Its purpose is to show actual changes in the cost of building construction and the effect upon new building volume and investment as the *index line of building cost* approaches or recedes from the "curve of stabilization."

The CURVE OF STABILIZATION represents the building cost line at which investors in this field may be expected to build without fear of too great shrinkage in the reproduction value or income value of new buildings. The index line representing actual cost of building entered the ZONE OF STABILIZATION in the fall of 1921. If this cost line passes *out* of the zone of stabilization, building volume will decrease materially.

The degree of the curve of stabilization is based on (a) an analysis of time involved in return to normal conditions after the civil war and that of 1812; (b) the effect of economic control exercised by the Federal Reserve Bank in accelerating this return after the recent war, and (c) an estimate of the probable normal increase in building cost.

Factors of Fluctuation in Building Costs



Analysis of new construction showing comparative importance of major building types in volume and investment.

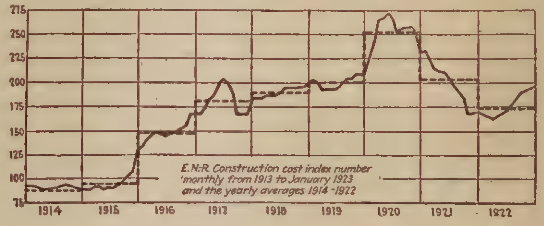
THE above charts, completed for 1922, indicate the approximate division of the money invested in new building and the number of square feet of new construction. This division is made in four general classes and serves to visualize the relative importance of each field, while the total of each monthly column shows the entire volume of investment. While housing activity overshadowed all other, surprising strength has been shown in the market for residential and commercial buildings of different natures.

MONTHLY TREND OF BUILDING COSTS

Under this heading will be found each month a discussion of the trend of building costs which provides information as to the various important factors affecting its upward or downward course. Items of information as to cubic foot costs and other data of importance will be found here.

THE trend of building costs during the past year is indicated on the graphic chart presented on the foregoing page. It will be noted that in December the upward trend of costs has ceased and a slight downward turn is manifested. All indications point to the fact that we have reached the peak of this second increase in building cost, and it is anticipated that until April costs will hold about the same level. From that point on the general trend will probably be slightly downward, although recurring waves of cost increase will occur in this downward trend. It is, of course, quite difficult to anticipate the height and length of such waves, as the index is affected by too many factors. It is obvious, however, that those who anticipate building this spring should get into the market immediately as deliveries in many classes of materials will be slow and there will probably be little benefit in waiting for price reductions. As the present market is spotty and subject to favorable closings on occasional lots of materials, particularly in the lumber field, a number of excellent opportunities are open for the careful purchaser. Materials available for spring construction will this year also be affected by the demand maintained through the winter.

Engineering News-Record has just presented an interesting analysis of the trend of building costs during the last 10 years. This index is computed only by the trend of costs in the great basic materials, steel, cement and lumber, together with the rate paid common labor, and is intended to give comparisons on a national basis. It is fairly indicative of actual building costs, however, and for this reason the chart and figures are presented below in order that comparisons may be made with known building costs in the different years. This information may be used for approximate estimating of cost of any type of building by indicating the known cost of an individual structure in any of these years and making comparison on the basis of the change indicated in the cost index. It will be noted in connection with these figures that the *E. N.-R.* index figure for January is 191.70, showing a slight drop over December due to decline in cement quotations. This figure is 13.6 per cent higher than the general construction cost figure of a year ago and 91.7 per cent above the 1913 level.



E.N.-R. Construction cost index number monthly from 1913 to January 1923 and the yearly averages 1914-1922

	1914	1915	1916	1917	1918	1919	1920	1921	1922
January....	89.22	87.12	130.46	167.75	184.51	198.05	206.55	230.87	168.72
February...	89.22	87.36	134.46	167.75	184.51	201.50	225.10	230.67	168.72
March.....	88.97	87.66	142.96	175.66	184.51	198.05	240.85	224.27	162.04
April........	87.97	90.16	147.31	183.41	186.01	191.25	265.20	213.07	164.72
May........	88.62	90.16	148.86	187.61	186.01	191.25	268.90	210.82	164.62
June.........	87.87	88.96	146.51	199.26	186.31	191.85	273.80	209.82	166.62
July........	88.12	90.51	145.76	204.01	188.65	193.65	265.65	203.82	169.70
August.....	90.11	91.76	146.56	198.41	193.85	196.65	252.00	193.07	173.40
September..	90.36	93.01	149.56	190.31	193.85	202.85	255.20	188.27	185.00
October....	88.51	96.16	152.91	167.11	193.85	202.25	255.20	182.57	188.60
November..	87.26	101.06	155.66	166.51	193.55	206.85	255.32	166.32	188.60
December..	86.51	107.06	167.15	167.11	194.75	206.85	251.62	167.82	192 60
Averages	88.56	92.58	147 35	181.24	189.20	198.42	251.28	201.78	174.45

BUILDING MATERIAL PRICES

Table Showing Average Prices Paid by Contractors for Building Materials at Local Distributing Points as of Dec. 1, 1922. Prepared by Division of Building and Housing of the Department of Commerce from Prices Secured through the Bureau of Census

Commodity	Size or Condition	Unit	Mass. Fitchburg	Mass. Haverhill	N. Y. Rochester	N. Y. Poughkeepsie	Penn. Pittsburgh	Penn. Erie	Md. Baltimore	Va. Richmond	W. Va. Fairmont	S. C. Columbia	Ga. Savannah	Fla. St. Petersburg	Detroit	Pontiac	Mich. Bay City	Saginaw	Lansing	Wis. Milwaukee
Common Brick		1,000	$24.00	$24.00	$16.25	$18.00	$14.25	$16.75	$20.00	$18.00	$24.00	$12.00	$15.50	$20.00	$17.00	$16.00	$13.00	$17.50	$14.50	$13.00
Portland Cement	Excl. of containers	Bbl.	3.12	3.20	3.35	3.30	2.85	3.40	3.20	3.60	2.85	3.85	4.00	4.00	.....	2.65	3.10	3.25	3.40	2.65
Yellow Pine No. 1	Dimension 2x4-16′ S1S1E	M	70.00	65.00	45.00	44.00	52.00	52.00	39.00	40.00	.....	.....	29.00	.....	55.00	50.00	45.00	50.00	47.00	42.00
Douglas Fir No. 1	Dimension 2x4-16′ S1S1E	M	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	55.00	.....	.....	.....	.....	.....
N. Carolina Pine No. 1	Dimension 2x4-16′ S1S1E	M	.....	52.00	.....	44.00	.....	52.00	.....	.....	48.00	22.50	.....	.....	.....	.....	.....	.....	.....	.....
Common Boards No. 1	1x6	M	55.00	43.00	40.00	39.00	49.00	50.00	.....	34.00	45.00	25.00	.....	.....	.....	50.00	42.00	42.00	45.00	37.00
Y. P. Flooring E. G. "C"	1x4-10′-16′	M	110.00	110.00	120.00	.....	77.00	.....	.....	75.00	.....	85.00	.....	.....	.....	75.00	.....	100.00	75.00	75.00
Douglas Fir V. G. No. 2	1x4-10′-16′	M	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Red Cedar Shingles	Extra clear 16″ 5 to 2	100 sq. ft.	6.58	6.50	6.25	.....	7.50	7.50	.....	.....	6.48	6.75	.....	9.00	8.00	7.00	6.50	7.00	.....	.....
Cypress Shingles	Extra clear 16″ 5 to 2	100 sq. ft.	.....	.....	.....	.....	.....	.....	.....	.....	.....	6.75	.....	.....	.....	.....	.....	.....	.....	.....
Composition Shingles	Crushed slate surfaced	100 sq. ft.	7.75	7.50	.....	6.50	6.25	6.00	....	6.00	6.25	6.25	7.00	8.00	7.50	7.00	6.00	6.00	7.50	7.00
Gypsum Plaster Board	⅜″	1,000 sq. ft.	.....	.....	31.00	.....	37.50	45.00	45.00	40.00	32.00	35.00	45.00	.....	50.00	40.00	38.00	40.00	35.00	32.00
Lime	Hyd. Com.	Ton	.....	19.00	19.00	20.40	22.00	20.00	15.00	20.00	15.00	20.00	23.00	.....	22.00	16.00	16.50	16.00	24.00	.....
Building Sand		Cu. yd.	1.80	2.50	.....	1.80	2.50	3.00	2.00	3.04	3.15	1.00	2.25	2.50	2.87	1.50	2.00	2.50	1.90	2.00
Crushed Stone	¾″	Ton	3.00	2.50	.....	2.28	5.50	3.00	.....	3.40	.....	3.00	5.50	6.25	3.00	.....	4.00	3.55	2.10	2.10
Window Glass	Single A 10″x12″	50 sq. ft.	4.00	.....	4.34	.....	5.58	.....	4.20	4.50	4.40	.....	.....	.....	4.50	.....	6.00	5.20	.....	4.50
Hollow Tile	8″x12″x12″	Each	.27	.27	.21	.21	.21	.20	.21	.25	.23	.20	.....	.23	.21	.18	.16	.17	.....	.14
Cast Iron Soil Pipe	4″ E.H. 13 lbs. per ft.	Ton	.....	.....	55.00	.....	80.00	.....	.....	.....	.....	.....	.....	.....	.....	53.00	52.00	51.00	.....	.....
Steel Pipe	1″ galv.	100 ft.	.....	11.50	.....	.....	9.35	.....	9.00	9.25	10.50	10.15	.....	.....	9.44	9.00	9.50	9.50	.....	11.50
Reinforcement bars	¾″ square	100 lbs.	3.30	4.00	3.20	4.50	3.25	.....	3.25	3.25	3.00	4.00	3.25	5.50	.....	3.50	3.35	3.60	3.50	.....
Structural Steel	Fab. 6″ I-beams	100 lbs.	.....	4.80	3.75	.....	2.80	.....	.....	4.10	5.00	4.00	.....	.....	4.75	4.50	.....	5.00	4.00	.....
Gypsum Plaster	Neat	Ton	24.00	.....	18.00	.....	22.00	24.00	22.50	22.00	19.00	21.00	21.00	23.00	17.50	17.00	18.00	17.00	17.50	.....
Roofing Slate	No. 1 Ribbon	100 sq. ft.	.....	.....	12.00	.....	13.50	.....	.....	13.00	12.00	.....	.....	.....	.....	17.00	16.50	16.00	.....	.....
Tar Paper Roofing	2-ply 75 lbs. per roll of	100 sq. ft.	3.00	3.00	2.50	.....	1.95	2.00	.....	2.00	.....	.....	1.90	2.75	.....	2.75	2.60	3.25	3.00	.....
Rosin Sized Sheathing	3-ply 30 lbs. per roll of	500 sq. ft.	1.25	1.60	1.05	.....	1.20	.85	1.25	.75	1.25	.....	.80	1.50	.....	1.00	1.00	.....	1.75	1.00

Commodity	Size or Condition	Unit	Iowa Waterloo	Iowa Council Bluffs	Missouri St. Louis	Missouri Kansas City	Cleveland	Akron	Ohio Toledo	Dayton	Hamilton	La. New Orleans	Texas San Antonio	Ariz. Tucson	Ore. Portland	Wash. Spokane	Wash. Seattle	N. D. Grand Forks	S. D. Sioux Falls	Calif. Sacramento
Common Brick		1,000	$18.90	$16.50	$14.50	$16.00	$16.00	$14.00	.....	$17.00	$23.00	$15.75	$13.00	$12.00	$19.00	.....	$20.00	$13.50	$18.00	$17.00
Portland Cement	Excl. of containers	Bbl.	2.80	3.00	2.85	2.80	3.40	3.25	$3.88	3.52	3.60	3.60	2.70	4.30	3.40	$2.88	3.00	4.00	2.76	3.40
Yellow Pine No. 1	Dimension 2x4-16′ S1S1E	M	45.00	48.00	46.00	46.00	57.00	50.00	49.00	45.00	47.00	40.00	50.00	.....	.....	.....	.....	.....	.....	.....
Douglas Fir No. 1	Dimension 2x4-16′ S1S1E	M	45.00	46.00	44.00	46.00	.....	.....	.....	.....	.....	.....	.....	60.00	18.00	28.00	20.00	50.00	47.50	41.50
N. Carolina Pine No. 1	Dimension 2x4-16′ S1S1E	M	.....	.....	.....	.....	.....	.....	.....	45.00	47.00	.....	.....	.....	.....	.....	.....	.....	.....	.....
Common Boards No. 1	1x6	M	45.00	48.00	49.00	51.00	50.00	50.00	.....	60.00	65.00	45.00	50.00	62.50	21.00	.....	20.00	48.00	44.00	43.00
Y. P. Flooring E. G. "C"	1x4-10′-16′	M	80.00	100.00	76.00	72.50	92.00	95.00	80.00	90.00	80.00	.....	80.00	.....	.....	.....	.....	.....	92.00	.....
Douglas Fir V. G. No. 2	1x4-10′-16′	M	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	97.50	56.00	70.00	56.00	95.00	80.00	81.50
Red Cedar shingles	Extra clear 16″ 5 to 2	100 sq. ft.	6.50	7.00	6.54	6.50	5.76	5.60	7.00	.....	6.40	.....	8.00	7.00	5.00	.....	3.65	7.50	.....	.....
Cypress Shingles	Extra clear 16″ 5 to 2	100 sq. ft.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Composition Shingles	Crushed slate surfaced	100 sq. ft.	7.50	8.00	6.23	5.80	6.00	.....	6.75	6.00	6.50	.....	.....	.....	14.00	.....	.....	8.00	7.50	.....
Gypsum Plaster Board	⅜″	1,000 sq. ft.	32.00	.....	41.00	45.00	46.00	32.50	31.25	32.50	.....	45.00	.....	55.00	35.00	55.00	34.00	60.00	36.00	.....
Lime	Hyd. Com.	Ton	25.00	.....	20.00	24.00	16.80	18.80	20.00	.....	18.00	.....	22.50	.....	26.00	27.25	20.00	.....	22.50	32.00
Building Sand		Cu. yd.	1.75	3.50	2.60	2.35	2.50	1.75	3.04	1.80	2.00	2.00	1.80	1.15	1.60	.....	1.75	3.00	1.50	1.50
Crushed Stone	¾″	Ton	3.50	5.00	.....	3.00	3.50	3.25	3.00	2.50	1.50	.....	2.50	3.00	2.80	.....	2.00	.....	2.50	2.75
Window Glass	Single A 10″x12″	50 sq. ft.	.....	.....	4.25	4.50	.....	5.40	.....	4.50	7.20	.....		.....	5.00	4.80	4.42	4.80	6.00	4.63
Hollow Tile	8″x12″x12″	Each	.14	.14	.....	.22	.....	.17	.....	.18	.18	.23	.....	.18	.....	.....	.30	.....	.16	.....
Cast Iron Soil Pipe	4″ E.H. 13 lbs. per ft.	Ton	50.00	.....	.....	.....	.....	85.00	.....	.....	78.60	.....	78.00	.....	.....	.....	75.00	.....	.....	83.16
Steel Pipe	1″ galv.	100 ft.	12.00	.....	.....	.....	.....	10.03	.....	8.57	9.16	10.37	.....	11.95	12.00	12.38	12.00	12.86	.....	10.85
Reinforcement bars	¾″ square	100 lbs.	3.35	3.15	.....	2.95	3.00	3.00	.....	3.00	3.25	4.00	.....	4.50	3.85	4.00	3.00	4.85	4.00	.....
Structural Steel	Fab. 6″ I-beams	100 lbs.	4.80	.....	4.00	.....	.....	3.25	.....	3.25	4.40	3.65	.....	.....	5.50	.....	5.00	.....	4.25	.....
Gypsum Plaster	Neat	Ton	18.00	18.00	18.50	15.50	.....	19.00	.....	19.00	17.50	22.00	22.50	23.00	24.00	18.00	21.00	.....	17.00	.....
Roofing Slate	No. 1 Ribbon	100 sq. ft.	16.00	.....	.....	.....	.....	11.40	.....	.....	13.50	.....	.....	.....	22.00	.....	.....	.....	.....	.....
Tar Paper Roofing	2-ply 75 lbs. per roll of	100 sq. ft.	.....	.....	.....	.....	2.50	2.50	.....	2.25	.....	2.25	2.40	3.50	.....	2.05	2.60	2.85	2.70	.....
Rosin Sized Sheathing	3-ply 30 lbs. per roll of	500 sq. ft.	1.50	1.50	.....	1.20	.90	.75	.....	1.15	1.00	.....	.....	1.60	1.60	.....	1.20	1.50	1.30	.....

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(*b*) That no committee member has affiliations with any manufacturer;
(*c*) That no committee member will be called upon for detailed service excepting by special arrangement;
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Specialist in land drainage, soil improvement, surveys, farm arrangement for economical production, purchase of equipment and economical layout of farm buildings with special reference to interior arrangement.

Address inquiries to committee members, care THE ARCHITECTURAL FORUM, 103 Park avenue, New York

THE FORUM DIGEST

A SURVEY OF IMPORTANT CURRENT ARTICLES ON BUILDING ECONOMICS AND BUSINESS CONDITIONS AFFECTING CONSTRUCTION

The Editors of this Department select from a wide range of publications matter of definite interest to Architects which would otherwise be available only through laborious effort

HOW LONG WILL THE PRESENT BUILDING BOOM LAST?

THE Copper and Brass Research Association of New York has recently presented the accompanying interesting chart which represents a forecast of building activity until the year 1926.

This chart shows the actual and anticipated courses of four variables which affect the volume of construction. These include:

1. Total construction requirement.
2. Normal yearly growth.
3. Total annual building expenditure.
4. Building shortage at the end of each year.

This explanatory statement accompanies this chart:

"Curve No. 1 indicates the total construction requirement or the total amount of money necessary each year to take care of the entire building need.

"Curve No. 2 shows the normal yearly growth in the building field. This is made up of the volume necessary to take care of, for instance, housing necessary for an increasing population; new developments, both in residential and business construction; replacements, such as fire losses, and alteration work.

"Curve No. 3 is a simple statement of the total amount of money spent yearly for building of various kinds.

"Curve No. 4 shows the building shortage at the end of each year. This curve represents the value of building needed and projected each year but (for various reasons) not built.

"The relation of these curves has been indicated in two places on the chart by two simple equations:

"1. Building shortage; normal yearly growth; total construction requirement (or need).

"2. Total construction requirement; building shortage; total annual building expenditure.

"As these curves represent dollars only, and not, as in some compilations, the square footage, or something similar, it must be remembered that the value of the dollar fluctuates over a period of years.

"Thus it will be observed that up to 1915 the curves are comparatively flat. With the war came a distinct advance in prices, culminating in 1920, and since then receding.

"Curve No. 2 (Normal Yearly Growth) reflects this inflation, as it will be noted that this figure increased from $1,700,000,000 in 1914 to $5,000,000,000 in 1920. Allowing for the normal growth as analyzed above and for the deflation of the dollar in the coming year, we have set the normal growth in 1925-26 as $2,750,000,000.

"In studying curve No. 4 it should be borne in mind that the shortage is plotted at the end of each year. That is to say, the $6,700,000,000 shortage shown on the line 1921 represents the figures for the end of the year 1920.

"It will also be noted that curve No. 1 has been plotted to the right of the year line. The explanation of this is as follows: It has been assumed that the total requirement is not known at the beginning of each year, but that the first three months are devoted to developing plans, etc., pending breaking of ground for operations on the first day of April. This is an entirely arbitrary assumption but seems to allow a better presentation.

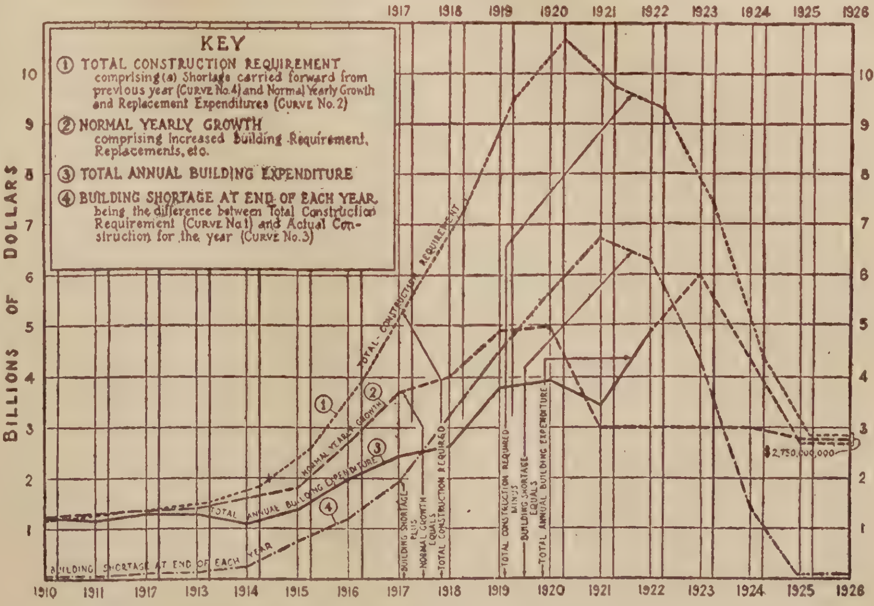
"It is of interest to observe that as far back as 1911 the expenditures fell behind the need, and that a shortage began accumulating. This shortage grew rapidly in the war years, for the inflation of the dollar brought high building costs and naturally building was deferred as much as possible. Thus we see the expenditures lagging more and more (if due allowance for decreased values be made) until in 1917, the war year, the shortage becomes greater than the actual amount of building done.

"The year 1919 will be remembered as a year of strikes, embargoes, high prices and general chaos in the building field. This condition is very accurately reflected in the curves. Building expenditures remained nearly stationary; the 'growth' increased nearly $1,000,000,000 over 1918, and consequently the 'shortage' jumped about the same amount, so that the total construction requirement represented in 1920, due to the accumulation of the previous five years, was the astounding sum of $10,700,000,000.

"Financial and industrial conditions did not improve in the next year, and the shortage increased in volume as the expenditure fell off, although, deflation having set in, the construction requirement began to recede from the 1920 peak. Deflation also brought a decrease in the 'Normal Growth' figures, and in 1921 we see the change setting in for the better. The building shortage is being caught up with.

"In 1922 prices, etc., were such as to make further delays inadvisable; the acute housing situation was relieved by the enactment in some large cities of laws favoring builders, and the individual owner found that he could wait no longer. Moreover, money became cheaper. So, in this year, we get a record expenditure of nearly $5,000,000,000.

"It is evident that the shortage has not yet been overcome. It also would appear that a further deflation may take



Forecast of Building Activity Until Year 1926. Prepared by Copper and Brass Research Association place. A total construction requirement exists at the present writing of $7,830,000,000. Taking these facts into consideration and assuming that the coming year will be free from strikes and other building disturbances, it seems safe to predict a year even greater than 1922.

"Whether the figure of $6,000,000,000 will actually be realized must, perforce, depend upon conditions which cannot be foreseen, but we feel justified in asserting that the coming year will see the greatest building program the world has ever known.

"If this takes place, the indications are that the building shortage will be overtaken and a long stride made toward getting back to normal. Assuming that $6,000,000,000 is the figure for 1923, it is easy to proceed to the logical conclusion, and it is evident that by the end of 1924 the 'blush will be off the rose,' and that in 1925 a normal market of between $2,500,000,000 and $3,000,000,000 may be looked for."

A STRONG INDICTMENT OF ARCHITECTS AND THE BUILDING INDUSTRY

IN the December 23, 1922 issue of *Forbes' Magazine*, there was presented a feature article which should occasion much thought and a considerable measure of justified indignation on the part of architects.

This arraignment of various important groups in the building industry by Edward K. Cormack (twice President of the National Builders' Supply Association) contains enough truth to justify its presentation, but it also takes the thoroughly warped viewpoint of the building material dealer based on contacts which could not have been representative in so far as the architectural field may be concerned. The article in question was presented under the heading, "Is There Something That Kills Honesty in Building Industry?" and is presented in full here:

"The construction industry is, next to agriculture, the greatest of our wealth-producing and distributing agencies. It furnishes employment to more men than any other industry; it gives the railroads over 50 per cent of their gross tonnage. Of the industries that supply the three great wants and needs of man—food, shelter, and amusement—building has, since the stone age, contributed most to the development of civilization and mankind. But despite its importance, the construction industry has 'just growed' —like Topsy; neglected, it has been knocked from pillar to post, the prey of unscrupulous men who have manipulated its possibilities not for the common weal, but for their own selfish ends. Ignored by those who are in control; reviled by demagogues until the public considers it a habitat of profiteers; deprived of the honest, competent leadership that would steady its ship, is it any wonder that building is the most disorganized industry in the United States, and that its slogan seems to be 'every fellow for himself, and the devil take the hindmost'?

"Of course, the public, with its characteristic refusal to study and attempt to understand the social and economic forces affecting it, does not perceive these facts. The man in the street, passing a construction project, knows only as much of building and the role it plays in industry and the distribution of wealth, as the man on the cliff watching the passing of ships knows of shipping and the commerce of which it is a part. Yet the man in the street does know (via the press, in which his faith is implicit) that construction is in bad repute. Yet the industry is ancient and honorable; a great secret society has built its ritual around the builder, using his tools to symbolize its ethical teachings; many have climbed to history, fame, and fortune, from its ranks; it affords opportunity for the unselfish service that America at present greatly needs; it is necessary, and yet it is in bad repute, so much so, indeed, that *Forbes*' asks, 'Is there something in the building industry which kills honesty?'

"Yes, there is something in the construction industry tending to destroy honesty. The construction industry is composed of five groups: (1) architects and engineers, (2) builders and contractors, (3) building workmen, (4) producers and manufacturers of building material, and (5) distributors and retailers of building material. It is significant that these groups frequently are aligned thus: architects and engineers, builders and contractors on one side of the fence; producers and manufacturers, distributors and retailers of building material on the other; and, perched on the fence itself, the workman, expressing to others, by attitude, if not by voice, 'to hell with you both, to the devil with everything excepting that which will profit myself.'

"Recently, I discussed with a nationally-known architect the Landis award, the strikes, jurisdictional disputes, the Lockwood and Dailey investigating committees, and in general the country-wide turmoil that has prevailed in the construction industry. We agreed that one of the causes of the unrest was the inability of these five groups to realize that each is a part of the whole, and that, like the organs of the body, each is necessary to the health of the whole, each dependent on the other. 'At present,' the architect said, 'each of these groups is trying to put over on the other groups as much as it can get away with.' He was right.

"Take the architects and engineers, men whom Goethe thought of as creators of 'frozen music,' comprising the only group of the five whose work is their 'profession.' Now, if you follow a profession, you are supposed to have a better education and, accordingly, higher ethical standards and spiritual values than those in other walks of life; the term 'profession' connotes this. The man in a profession, too, is supposed to place his work, his value as a *creator* to the community and country, above mere monetary gain. How have the architects met this demand? There is always the exception, but the exception does not make environment or its conditions, and with the exception I have, here, no concern.

"Through long contact and association, I know Group 1—architects and engineers— and the other groups, as a politician knows his ward; and, anomalous as it may seem, this group is, in the mass, almost illiterate. I mean 'illiterate' in its popular sense; while this group can draw, calculate, and write specifications, its education is technical and it is not privy to, nor does it seem interested in, the intellectual background, the broader knowledge of social and economic affairs that 'education' implies. Other professions are notable for the higher education, the intensive graduate study they require; but the architectural-engineering group gives the impression that the gesture with which it received diploma and license automatically sealed the book of knowledge. It has its chapters and councils, but the membership is more interested in numbers than quality, and to the public its gatherings have neither standing nor importance.

A Declining Profession

"It is less than 10 years ago that the architectural-engineering group stopped openly demanding and getting graft from the contractor and material man engaged to serve clients. It did not call it 'graft,' of course, for graft is an ugly word; it spoke of graft as 'commissions' and, as a sop to conscience, thought of it as legitimate because 'everybody was doing it.'

"Reform, it should be noted, finally came, not from inside the group, but from the rebellion of the exploited groups who refused longer to be bled. The architect-engineer group is commercialized along different lines today, and is steadily losing its right to be known as a profession. Its success depends upon its ability to give the client a building—residence, apartment, factory, hotel, skyscraper, or what not—at less than a fair cost. This is accomplished by violation of building codes, tampering with the safety factor, privately opening contractors' bids, and perhaps by lying to the lowest bidder, as for example, 'I'd like to see you get this job, but you're high; if you'll come down a few thousand.

"Also, the commercial architect must be 'in good' with the labor unions, and the sordid quality and aspects of this partnership between those graduated from universities and those schooled in the jungle tactics of Bowery and Back o' the Yards has been but timidly touched upon in the recent investigations.

"In the beginning, an architect was also a contractor, employing a skilled foreman to handle each branch of the trade, but now there are builders (sublimated, 'dignified' contractors), contractors, and sub-contractors. The architect-engineer group has the power to make or mar the builder-contractor group, for the architect awards the job; but architects, like the rest of us, bungle, and the contractor knows that sooner or later in the course of his work for Group 1 he will find a defect in specifications or plans, and that then, by silence and 'covering up,' he can exert pressure that will enable him to get away with extras, etc., not included in the original bid. In this respect, the contractor is to the architect-engineer group what the undertaker is to the doctor. Whichever way you look at the relationship, the cards are stacked against the client.

"But it is the contractor's association with the sub-contractor that, more than anything else, perhaps, shows the dishonesty festering in the industry.

"By sub-contracting one may reap what another has sown. For, by withholding for months the money due the sub-contractor whom he has hired, the builder or contractor acquires working capital.

"And the 'sub,' feeling that he is a catspaw, is sore, awaiting the first chance to get even and collect 'his.' That this graft must, in the last analysis, be paid by the owner of the building under construction does not concern the 'sub.' He knows that he is being held up, that his creditors are hounding him for the money the contractor is holding back; so to minimize his losses, he puts less cement than is called for in the concrete, he spreads plaster with a brush instead of trowel, his lumber is green and off-grade, his mortar weak as prohibition. And so it goes.

"The building mechanics, Group 3, are most in the public eye, and lately their reputation has been bad. Of the countless evils attributed to this group, two are most important: the 'shake-down' strike and soldiering.

"The first unreasonable strike on a building occurred in a Western metropolis, and was planned by the contractor, himself a victim of an unfair contract, who slipped a union agent 'a wad of dough' to call a strike so that he, the contractor, would not be penalized for late arrival of material. Here graft began to affect Group 3, but the spring has swollen to an ugly undertow; it topples institutions held sacred, for the union leaders, hating to see so much easy money slide by, went their instructors one better and established the jurisdictional strike. They were aided by sub-contractors who were quick to take advantage of the opportunity to create another group that would live by others' toil.

"For the benefit of those not familiar with the jurisdictional strike, it can briefly be described as a dispute between two trades to decide which trade shall perform certain work on a building; and the dividing line between what is and what isn't lawful, according to union law, is so vague that the labor leaders are enabled to use this kind of strike for many a 'shake-down.'

Public Pays the Bill

"The jurisdictional strike, and acceptance of it as a legitimate building expense, has spread to such an extent that architect-engineers include in original estimates sums to pay for the settlement of these strikes. And it is without doubt the jurisdictional strike that breeds much dishonesty in the industry, and at the same time makes that curious entity, 'the public,' see red when building is mentioned.

"The unions have accepted the principle that all men are created equal, but they have not stopped there; they have gone the famous declaration one better, so that, to the union, all men not only are created equal, but stay equal as well. As a consequence, the skilled worker, seeing a blinkard receive as much pay as himself, naturally slows his speed to that of the unskilled man. This soldiering is not altogether the result of the union's limitation of work per day per man; it springs, too, from the slime that cakes the entire industry. For the working man is no fool. Whichever way he looks, he sees the other groups putting something over, or trying their best to do so, until whatever creative energy or joy he may have had, the pride in work well done, is killed.

"A Witless Industry"

"As I indicated, the units producing and manufacturing building material, large and small, are on the other side of the fence, the majority of them wondering, sometimes with emotion akin to madness, how their payrolls are to be met and whether, by 'a gentleman's agreement' enough money can be raised to pay their debts before some Untermyer drifts along and offers to care for them at the state's expense. On this side of the fence, competition is cut-throat at its worst, and under such a condition something is bound to break. Honesty breaks.

"To the public, even, it is plain why the construction business should be called 'a witless industry.' With the exception of the steel, cement, and, possibly, lumber divisions of this group, the members play the exhausting game of chasing their own tails, running around in mad circles endeavoring to build up their own particular business with no thought or regard for the group, or the industry. No incisive policy guides their actions; their wares are now marketed through their retailer, now direct to the consumer, according to caprice. They cannot see that the prosperity of the unit must come from the prosperity of the group. Quarreling among themselves, billing off-grade stuff as 100 per cent, short tallying, overshipping to give the buyer a better price than that shown on the invoice and at the same time to keep price agreements with competitors, their minds full of suspicion, distrust—these units contribute to the general dishonesty from which the industry suffers.

"The retailer, the last of the considered groups, though extremely important, is the most richly damned and poorest organized unit of the lot. Often the retailer is left holding the bag, for he has to carry the contractor on his books until the contractor gets paid, and, as has already been indicated, Group 1 often makes the contractor wait months. The contracting group is the poorest credit risk, and because of this lien laws are made; but despite laws and vigilance the retailers are very often left bemoaning the loss of material supplied.

Absence of Ethics

"Ethics are absent from the relationship of these groups. If the contractor, after placing an order with 'A,' finds that he can get a lower price from 'B,' he changes the order without even advising 'A.' I know of a large material firm that repudiated this custom, for it is a custom, and advertised 'A contract is a contract.' The idea was so novel that criticism from contractors came in on all sides. Living with and doing business with the groups discussed as they are, it is probably natural that Group 5 should come to look upon its customers as prey, instead of friends and partners in an industry that has been, and I believe will again be, great. When opportunity offers, as it did in the fall of 1920, to repudiate obligations to contractors, why, of course, the retailer does it. It is simply 'getting even.'

"The five groups of the construction industry and the men comprising them are similar to groups and men that make up other industries. They suffer from an environment partly of their own making, partly of external conditions, but not impossible to change and remedy. But reform cannot come until all of these groups, severally and collectively, realize that they and it are one; until they cease to groan about their 'rights,' and, instead, lift united voices to Service and —although the sentiment appears to be out of date—to Duty."

ARCHITECTS AID APPRENTICE TRAINING PLAN IN NEW YORK

THE Building Congress, which is primarily the result of the efforts of a group of architects to form a general organization of representatives of all the various elements comprising the building industry, is achieving practical progress in a number of cities. The New York congress has succeeded in launching a workable plan for training apprentices, the chief features of which are given here from an article by the managing director of the congress, Frank L. Glynn, that appeared in *Engineering News-Record* of January 11, 1923.

The plan is in the hands of the Apprenticeship Commission of the New York Building Congress, and already it has been applied to two of the trades. "It provides for a 4-year apprenticeship during which practical daily work is supplemented by evening instruction under the supervision of the public school administration. The training comprises five and one-half 8-hour working days per week continuously and 4 hours evening instruction weekly for a period of 38 to 40 weeks per year. The New York Board of Education has made a specific appropriation of $20,000 for this work during the fiscal year 1922-1923. The apprenticeship commission places the apprentices through co-operation with the placement department of the public schools and with the employers, and exercises a continuing supervision in order to insure that the boys keep up with their studies and that the employers give them the graded work necessary for training.

"*How Agreements Are Made.* The apprenticeship agreements are negotiated by conferences between the commission and joint trade committees composed of representatives of the trades unions and the employers. The commission itself consists of five representatives of the building trades unions, five employers, and three neutrals who are interested in building construction but who are nonpartisan as between the unions and the employers. In all the conferences with the various trades, this commission represents the congress, but each of the trades has its own joint trade committee. When satisfactory standards of apprenticeship have been drawn up, they are ratified by the joint trade committees and incorporated in the trade agreements.

"The ratio of apprentices in each trade is determined as a result of an exhaustive study of seasonal employes in the building industry in the metropolitan district, in the course of which 93,000 cases were studied for each year of a 10-year period. This is a matter of the utmost importance, for an essential feature of the apprenticeship plan is continuity of employment, which could not be realized if the number of apprentices were excessive. This difficulty is accentuated in the building trades because of their seasonal nature. Although it is planned to allow 4 years in which to bring the plan into full operation, the ratios in each case have been based upon 50 per cent of the lowest rate of employment, thereby allowing for a falling out of about half of those that start.

"*A Specific Case.* As an example of how this plan works out in a specific case, the apprentice ratio for the painting and decorating trades for the first year has been placed at 140 apprentices to a total of 8,000 journeymen. The apprentices must be between 16 and 21 years of age and are required to put in a probationary period embodying the first two weeks of employment. Advanced credit is allowed to apprentices for previous trade experience or for work in an approved school subject to rating by the joint apprenticeship committee of the trade.

"The wages of an apprentice are for his first year $33\frac{1}{3}$ per cent of the beginning journeymen's wage, for the second year $44\frac{4}{9}$ per cent, for the third year $55\frac{5}{9}$ per cent, and for the fourth year $72\frac{2}{9}$ per cent. For the time spent in the school the employer allows the apprentice one-half the regular hourly wage rate. Apprentices who do not keep up their school work are subject to discharge by their employers and to exclusion from membership in the unions.

"The subjects taught in the schools include related mathematics, trade sketching and drawing, shop practice, related science and general information. In his work, the apprentice is taught the processes and the care and use of the tools used in the painting and decorating trade.

"*The Industry Supports the Plan.* Both employers and trades unions are loyally supporting this plan, as they have been brought face to face with the necessity for bringing young men into the trade and for giving them a thorough training in order to maintain the high degree of skill established by the industry, which heretofore has depended more or less upon skilled workers coming from European countries and has neglected the training of the younger workers."

Leaders in many of the trades which play an important part in building have realized for some time that unless these trades were recruited with new workers the time would come when the trades would be faced with utter extinction as older workmen die off.

INVESTMENT MORTGAGE SURVEY

THIS interesting analysis of the mortgage situation was presented by R. D. Maxwell in *Forbes' Magazine* for December 23, 1922:

"To a great class of sound, conservative, substantial people who, fortunately, form a large proportion of the population of the United States, mortgage investments have always made a strong appeal. These people seek safety first of all in their investments, and are willing to sacrifice speculative gains in order to obtain safety. With safety assured, they enjoy seeking and obtaining good bargains in the way of liberal interest returns, for many of these people are good judges of property values. Sometimes they seem to possess a sort of sixth sense for property values and mortgage investments. Over a long period of years the mortgage investor can show a handsome rate of return on his money by reinvesting his accrued interest.

Favored by Banks

"While individual investors are more and more beginning to appreciate the merits of first mortgage securities, these securities have for many years been favorites with such experienced investors as banks, insurance companies and other institutions with large sums to lend. These institutions, to which safety is forever the watchword, found that first mortgages offered a safe and profitable form of investment for the vast amounts of other people's money which they had on hand. According to the latest available statistics, banks in all states throughout the United States own more than $3,600,000,000 of first mortgages on real estate. The life insurance companies of the United States, which are recognized as being as sound and stable as any institutions in the world, have more than $2,300,000,000 of their funds invested in first mortgages. The amount owned by life insurance companies is increasing year by year.

"Another great investor in first mortgages is the building and loan association. There are more than 8,000 such associations in the United States with a total membership numbering more than 4,300,000 persons. The total assets of these associations, constituted almost wholly of first mortgages on real property, now amount to approximately $2,500,000,000. There can be no better indication of the safety and other high investment qualities of first mortgage securities than the fact that these great financial institutions such as banks, insurance companies, and building and loan associations have placed billions of dollars of their money in first mortgages.

"Banks and insurance companies are experienced buyers of mortgages. They employ experts who make careful investigations to prevent investment losses. Today the individual investor is in a position to invest his money in first mortgage securities with equal safety. There are reliable firms of investment bankers who make it their business to select good mortgage paper and sell it to their clients. In many cases the client relies absolutely on the banker's good judgment and honesty. But be sure that the banker is a man or a firm of high integrity and unquestioned ability.

"Mortgages have long been popular as investments because the intrinsic soundness of the security was early established, and today mortgages are bought and held by people who would not think of touching anything else. Their rules for testing the investment are simple. The security must be a first mortgage—that is, it must be a first claim on the property, rather than a second mortgage which would only be paid (in case of foreclosure) after the existing first mortgage has been paid. And the loan or mortgage must not exceed 60 to 70 per cent of the actual value of the property, so that ample protection would be assured in case a forced sale became necessary. Needless to say, until comparatively recent years investing in mortgages by individuals was pretty much restricted to local operations, as each investor would want to be personally familiar with the property involved. He would usually lend in his own community, though now and then when he 'took a trip' to another section he would come across a particularly attractive proposition and would make a loan, based on his personal observation.

Two Classes of Mortgages

"Mortgages, considered with regard to the kind of property securing them, fall into two main classes: farm mortgages and city real estate mortgages. Mortgages on city real estate range in amount from the $1,000 loan on a small residence property to the loan of hundreds of thousands or even millions on large apartment buildings, hotels and other commercial structures. Mortgages on the latter class, of course, are too large for any individual investor to consider, so a plan was evolved of splitting these large loans into smaller parts for distribution to individuals in convenient amounts.

"The mortgage of moderate amount on an individual piece of property usually runs from 5 to 10 years. Bankers who sell these mortgages to individuals usually make it their business to look after all legal and technical details such as appraisal of the property, payment of taxes and insurance, supervision to prevent deterioration, collection and remitting of interest and principal, etc. In this way the field of mortgage investment has been widened until the investor in Massachusetts can buy a mortgage on California property three thousand miles away and be perfectly sure of what he is getting provided he deals with the right sort of banker."

Selected List of Manufacturers' Literature

FOR THE SERVICE OF ARCHITECTS, ENGINEERS, DECORATORS, AND CONTRACTORS

The publications listed in these columns are the most important of those issued by leading manufacturers identified with the building industry. They may be had without charge, unless otherwise noted, by applying on your business stationery to *The Architectural Forum,* 142 Berkeley St., Boston, Mass., or the manufacturer direct, in which case kindly mention this publication.

Listings in this Department are available to any manufacturer at the rate of $5 per listing per month.

ACOUSTICS

Johns-Manville, Inc., Madison Ave. & 41st St., New York, N. Y.

Architectural Acoustics. Booklet. 6 x 9 in. 24 pp. Illustrated. Treatise on the correction of architectural acoustics in churches, schools, hospitals, office buildings and other places.

ASH HOISTS—ELECTRIC AND HAND POWER

Gillis & Geoghegan, 544 West Broadway, New York, N. Y.

General Catalog. 8½ x 11 in. 20 pp. Fully illustrated. Contains specifications in two forms (with manufacturer's name and without). Detail ¼" scale for each telescopic model and special material-handling section.

The Man-Saving Load Lifter. 5⅞ x 8⅞ in. 8 pp. Illustrated. Describes G&G Telescopic and Non-Telescopic Hoists for handling material in factories.

BATHROOM ACCESSORIES

The Fairfacts Company, 234 West 14th St., New York, N. Y.

Catalog F. 4 x 9 in. 12 pp. Illustrated. Describes full line of china fittings for bathrooms.

The Perfect Bathroom. Booklet. 4 x 9 in. 12 pp. Illustrated. Shows full line, Biltin and Projecting Types, installed. For architects and clients.

BOILERS—See Heating Equipment

BRICK

American Face Brick Association, 1751 Peoples Life Bldg., Chicago, Ill.

The Story of Brick. Third Edition. Booklet. 7 x 9¼ in. 55 pp. Illustrated. Presents the merits of face brick from structural and artistic standpoints. Tables of comparative costs.

The Home of Beauty. Fourth Edition. Book. 8 x 10 in. 72 pp. Color plates. Presents fifty designs for small face brick houses submitted in national competition by architects. Text by Aymar Embury II. Architect. Price 50c.

Bungalow and Small House Plans. Booklets. 8½ x 11 in. 50 pp. Illustrated. Four booklets, showing a variety of designs for small face-brick houses, covering 3, 4, 5, 6, 7 and 8 room houses. Price, 25c. each, $1 for the set.

A Manual of Face-Brick Construction. Booklet. 8½ x 11 in. Text-book on construction of the brick wall and various uses of face brick. 31 colored plates of brick houses with plans. Price, $1.00.

Architectural Details in Brickwork. Series 1, 2, 3. 8½ x 11 in. Very useful to the architect or draftsman. Sent free to architects applying on their office stationery. To others, $1.50.

BUILDING FINANCE

S. W. Straus & Co., 565 Fifth Ave., New York, N. Y.

The Straus Plan of Financing. Booklet. 8 x 6 in. 24 pp. Illustrated. Describes Straus system of co-operation with Architects, Builders, Engineers and Brokers in financing important building operations; also the making of construction loans on the larger and better properties in our large cities.

Forty-one Years Without Loss to Any Investor. Booklet. 8 x 5 in. 38 pp. Illustrated. A carefully prepared booklet for the thinking investor. Describes Straus bonds, the property upon which loans are made, and explains the Straus plan of safeguards which made possible the 41-year record.

BUILDING STONE—See Stone, Building

BUILDINGS, STANDARD STEEL

Truscon Steel Company, 250 W. Lafayette Bldv., Detroit, Mich.

Truscon Standard Buildings. Catalog. 8½ x 11 in. 48 pp. Contains data and illustrations.

BUILDINGS, STEEL PRODUCTS FOR

Truscon Steel Company, 250 W. Lafayette Blvd., Detroit, Mich.

Truscon Data Book. Catalog. 3½ x 6 in. 128 pp. Illustrated. Contains complete information with illustrations on Truscon reinforcing steel, steel windows, metal lath, standard buildings, concrete inserts, steel joists, pressed steel stampings and chemical products.

CEMENT

Carney Company, The, Mankato, Minn. Booklet. 8 x 10 in. 24 pp. Illustrated. Complete information on product, showing prominent buildings in which this cement has been used.

Louisville Cement Co., 315 Guthrie St., Louisville, Ky.

Brixment. Booklet. 7½ x 5 in. 16 pp. Illustrated. Brixment, what it is, what it does, how it does it and why.

Sandusky Cement Co., Dept. F, Cleveland, Ohio.

Medusa White Portland Cement, Stainless. Booklet. 8½ x 11 in. 48 pp. Illustrated.

Medusa Waterproof White Portland Cement. Booklet 6 x 9 in. 32 pp. Illustrated.

Medusa Review. 6 x 9 in. 18 pp. Illustrated. House organ issued bi-monthly.

CONDUIT

National Metal Molding Co., 1113 Fulton Building, Pittsburgh, Pa.

Bulletin of all National Metal Molding Products. In correspondence folder. 9½ x 11½ in.

Sherarduct. Circular. 5 x 8 in. Illustrated.

Flexsteel. Circular. 5 x 8 in. Illustrated.

CONSTRUCTION, FIREPROOF

National Fire Proofing Co., 250 Federal St., Pittsburgh, Pa.

Standard Fire Proofing Bulletin 171. 8½ x 11 in. 32 pp. Illustrated. A treatise on fire proof floor construction.

Northwestern Expanded Metal Co., 934 Old Colony Building, Chicago, Ill.

Fireproof Construction. Catalog. 6 x 9 in. 72 pp. Illustrated. Handbook of practical suggestions for architects and contractors. Describing Nemco Expanded Metal Lath.

Fireproof Construction. Handbook. 6 x 9 in. 72 pp. Illustrated. Describing Kno-Burn expanded metal lath.

United States Gypsum Company, 205 West Monroe St., Chicago, Ill.

Pyrobar Gypsum Tile. Booklet. 8½ x 11 in. 32 pp. Illustrated. Details and specifications for fireproof partitions.

Bulletins, 8½ x 11 in., containing details and specifications for Pyrobar voids for use with reinforced concrete joist floor construction; Pyrobar roof tile; and monolithic gypsum floors and roofs.

DAMPPROOFING

Sonneborn Sons, Inc., L., 116 Fifth Ave., New York.

Specification Sheet. 8½ x 11 inches. Description and specifications of compounds for dampproofing interior and exterior surfaces.

The Truscon Laboratories, Detroit, Mich.

Booklet. 5⅛ x 7¾ in. Illustrated. Contains descriptions and specifications of black dampproofing compounds for interior and exterior use.

DOORS AND TRIM, METAL

The American Brass Company, Waterbury, Conn.

Illustrated pamphlet describing use and adaptability of Extruded Architectural Bronze Shapes for metal window frames, doors, grilles, counter screens, etc.

Dahlstrom Metallic Door Company, 425 Buffalo Street, Jamestown, N. Y.

Architectural Catalog. 10 x 14 in. 46 pp. 11 sections. Illustrated. Catalog showing our regular styles and types of hollow metal doors and interior trim. Various types of frames and other architectural shapes also illustrated.

Architectural Portfolio. 14 x 18 in. 30 pp. Illustrated. Portfolio of various designs and types of Dahlstrom doors. Drawings and details of each style or type. This is only sent free to reliable architects.

The Compound & Pyrono Door Company, St. Joseph, Mich.

Pyrono Handbook for Architects and Contractors. 8½ x 11 in. 16 pp. Contains full information regarding Pyrono Fireproof Veneered Doors and Trim, with complete details and specifications.

Pyrono details in sheet form for tracing.

Richards-Wilcox Mfg. Co., Aurora, Ill.

Fire Doors and Hardware. Booklet. 8½ x 11 in. 64 pp. Illustrated. Describes entire line of tin-clad and corrugated fire-doors, complete with automatic closers, track hangers and all the latest equipment—all approved and labeled by Underwriters' Laboratories.

DRAFTING MATERIALS

American Lead Pencil Company, 220 Fifth Ave., New York, N. Y.

VENUS Pencil in Mechanical Drafting. Booklet C20. 6 x 9 in. 16 pp. Illustrated. Describes the many possibilities of the VENUS for technical drawing.

Catalog. 3¾ x 8¾ in. 25 pp. Illustrated. Describes pencils, holders, erasers, etc.

DUMBWAITERS

Kaestner & Hecht Co., Chicago, Ill.

Bulletin 520. Describes K. & H. Co. electric dumbwaiters. 8 pp.

Sedgwick Machine Works, 151 West 15th Street, New York.

Catalog and Service Sheets. Standard specifications, plans and prices for various types, etc. 4¼ x 8¼ in. 60 pp. Illustrated.

ELECTRICAL EQUIPMENT

Frink, Inc., I. P., 24th Street and 10th Avenue, New York, N. Y.

Catalog 415. 8½ x 11 in. 46 pp. Photographs and scaled cross sections. Specialized bank lighting, screen and partition reflectors, double and single desk reflectors and Polaralite Signs.

General Electric Company, Schenectady, N. Y.

Wires and Cables. Booklet. 8 x 10½ in. 85 pp. Illustrated. Four bulletins in a binder, describing wires and cables in general, conductors insulated with vulcanized rubber compound, varnished cambric and paper insulated cables, splicing materials and junction boxes for cable installations, armored cables.

Electric Fans. Folder. 6 pp. 3¼ x 6 in. Illustrated. Describes 1922 line of electric fans, giving catalog numbers, voltages and frequencies.

Reliable Wiring Devices. Catalog. 3 x 4⅝ in. 206 pp. Illustrated. Pocket catalog giving prices, schedule classifications and data for socket receptacles, switches, rosettes, cutouts and fuses for miscellaneous devices.

Lighting of Public Buildings. Bulletin. 6 x 9 in. 25 pp. Illustrated. Describes lighting of galleries, banks, museums, libraries, municipal, county and state buildings.

SELECTED LIST OF MANUFACTURERS' PUBLICATIONS — *Continued from page 89*

ELECTRICAL EQUIPMENT—Continued

Hart & Hegeman Mfg. Co., 342 Capitol Ave., Hartford, Conn.

A new H & H Switch. Leaflet. 3½ x 6 in. 4 pp. Illustrated. Illustrates a new H & H composition base push switch of DeLuxe quality.

Tumbler Switches. Booklet. 3½ x 6 in. 6 pp. Illustrated. Shows complete line of H & H Tumbler Switches.

H & H Elexits. Booklet. 8 x 10¼ in. Illustrated. Shows new complete line of Elexits—places for lights. May be used for Wall Receptacles or Electric Fixtures.

H & H Radio Button Push Switches. Booklet. 3½ x 6 in. Illustrated. Radio Luminous Buttons applied to Push Switches and Sockets.

The Holtzer-Cabot Electric Co., Amory St., Boston 19, Mass.

Signaling Systems for Hospitals. Brochure. 8½ x 11 in. 42 pp. Illustrated. Contains complete data covering Nurse's Call, Doctor's Call, "In" and "Out," Fire Alarm, Watchman's Clock and Telephone Systems.

Signaling Systems for Schools. Brochure. 8½ x 11 in. 47 pp. Illustrated. Contains complete data covering Telephone Systems, Program Bells, Fire-Alarm Systems, Low Tension Power Plant and Laboratory Equipment.

Kohler Co., Kohler, Wis.

Kohler Automatic Power and Light 110 Volt D. C. Booklet. 5 x 7 in. 32 pp. Illustrated. Describes a standard voltage automatic, electric power and light plant for isolated homes.

Simplex Wire & Cable Co., 201 Devonshire Street, Boston, Mass.

Simplex Manual Catalog and reference book. 6¾ x 4¼ in 92 pp. Contains in addition to information regarding Simplex products, tables and data for the ready reference of architects, electrical engineers and contractors.

Specification No. 2053. For Simcore Wires and Cables. Various sizes of Conductor-Rubber Insulation.

Sprague Electric Works of the General Electric Company, 527 West 34th St., New York, N. Y.

Panel Boards and Cabinets. Catalog No. 47901. 8 x 10½ in. 70 pp. Illustrated. Panel Boards and Cabinets shown in this catalog have been selected after careful study of the general requirements. All appliances listed herein meet with the requirements of the National Board of Fire Underwriters.

Panel Circuits. Bulletin No. 47941. 8 x 10½ in. 8 pp. Illustrated. In addition to circuits for panel boards illustrated, a full line of circuits for panel boards having fuses inside branch circuit switches is also listed.

Panel Boards and Cabinets. Bulletin No. 47942. 8 x 10½ in. 16 pp. Illustrated. This bulletin covers the ever increasing demand for devices that provide maximum safety to the operator.

Narrow-Unit Panelboards (Safety Type). Pamphlet. 8 x 10½ in. 4 pp. Illustrated. Describes latest Sprague Panel Board, very narrow, but complete.

Varnum Door Engine Company, 949 West 16th St., Los Angeles, Calif.

Varnum Electric Door Engines. Booklet. 5 x 7¾ in. 16 pp. Illustrated. Descriptive booklet containing illustrations and list of representative institutions now using Varnum Door Engines.

ELEVATORS

Kaestner & Hecht Co., Chicago, Ill.

Bulletin 500. Contains 32 pp. Giving general information on passenger elevators for high buildings.

Bulletin 530. Interlocks for Passenger and Freight Elevators.

Bulletin. Signals; for Passenger and Freight Elevators.

Otis Elevator Company, 11th Ave. & 26th Street, New York, N. Y.

Otis Push Button Controlled Elevators. Booklet. 6 x 9 in. 56 pp. Illustrated. Detailed description of Otis Push Button Elevators. Their uses in residences, stores, institutions, apartment houses, business offices and banks, etc.

Otis Gravity Spiral Conveyors. Booklet. 6 x 9 in. 56 pp. Illustrated. Gravity spiral conveyors for lowering packaged merchandise, boxed, caged and bundled goods in factories, warehouses, terminal buildings, etc.

Otis Electric Traction Elevators. Booklet. 9 x 12 in. 28 pp. Illustrated. Full details and illustrations of Otis geared and gearless traction elevators for all types of buildings.

Otis Escalators. Booklet. 6 x 9 in. 36 pp. Illustrated. Description of step and cleat type single and double file escalators (moving stairways).

Richards-Wilcox Mfg. Co., Aurora, Ill.

Elevators. Booklet. 8½ x 11 in. 24 pp. Illustrated. Describes complete line of "Ideal" elevator-door hardware and checking devices, also automatic safety devices.

Sedgwick Machine Works, 151 West 15th Street, New York.

Catalog and descriptive pamphlets. 4¼ x 8¼ in. 70 pp. Illustrated. Descriptive pamphlets on hand power freight elevators, sidewalk elevators, automobile elevators, etc.

FENCES

American Fence Construction Co., 130 West 34th St., New York.

Afco Factory Fences. Booklet. 9 x 12 in. 32 pp. Illustrated.

Residential Fences. Booklets. 7 x 2½ in. Illustrated. A series of booklets on residential fences consisting of photographs and brief descriptions.

Page Steel and Wire Company, Bridgeport, Conn.

Page American Ingot Iron Fence. Booklet. 4 x 6⅝ in. 76 pp. Illustrated. Complete information, with diagrams, sizes, etc., for those interested in rust-resisting iron fence made of ARMCO iron.

Page Ornamental Fence for Lawn and Garden. Booklet. 6 x 9 in. 12 pp. Illustrated. Description, with photographs and diagrams of lawn fence and gates. Complete instructions for ordering fence.

The Stewart Iron Works Company, Cincinnati, Ohio.

Book of Designs "B." 9 x 12 in. 80 pp. Illustrated. Book of designs illustrated from photographs of ornamental iron fence and entrance gates erected by us. Valuable to architects.

FIRE DOORS—See Doors, Windows and Trim, Metal

FIREPLACE EQUIPMENT

Covert Co., H. W., 137 E. 46th Street, New York, N. Y.

Hints on Fireplace Construction. Catalog. 5⅝ x 8½ in. 11 pp. Illustrated. Diagrams of construction and installation of Covert "Improved" and "Old Style" Dampers and Smoke Chambers. Also illustrations of Covert brass and wrought iron Fireplace Fittings.

FLOORING

Armstrong Cork & Insulation Co., 132 24th Street, Pittsburgh, Pa

Linotile Floors. Catalog. 6 x 9 in. 40 pp. Color plates. Describes Linotile, a composition of ground cork, wood flour, linseed oil and various gums and pigments in tile form.

Armstrong's Cork Tile. Revised Edition. Booklet. 24 pp. 5 x 7 in. Illustrated in color. Contains complete specifications.

Armstrong Cork Co. (Linoleum Dept.), Lancaster, Pa.

Armstrong's Linoleum Floors. Catalog. 8½ x 11 in. 54 pp. Color plates. A technical treatise on linoleum, including table of gauges and weights and specifications for installing linoleum floors.

Decorative Floors. Booklet. 11¼ x 15 in. 16 pp. Color plates.

Armstrong's Linoleum Pattern Book, 1922. Catalog. 3½ x 6 in. 168 pp. Color plates. Reproductions in color of all patterns of linoleum and cork carpet in the Armstrong line.

Quality Sample Book. Three books. 3½ x 5¾ in. Showing all gauges and thicknesses in the Armstrong line of linoleum and cork carpets.

Detailed Directions for Laying and Caring for Linoleum. Handbook. 5 x 7 in. 48 pp. Instructions for linoleum layers and others interested in learning most satisfactory methods of laying and taking care of linoleum.

Business Floors. Booklet. 6 x 9 in. 48 pp. Illustrated in color. Explains use of linoleum for offices, stores, etc., with reproductions in color of suitable patterns, also specifications and instructions for laying.

Carter Bloxonend Flooring Co., Long Bldg., Kansas City, Mo.

Bloxonend Flooring. Booklet. 3¼ x 6¼ in. 20 pp. Illustrated. Describes uses and adaptability of Bloxonend Flooring to concrete, wood or steel construction, and advantages over loose wood blocks.

Specification Sheet. 4 pp. 8½ x 11 in. Illustrated. Standard Specifications in convenient form for Architects and Engineers.

Lateral Nailing Specification. Folder. 8½ x 3¾ in. 4 pp. Illustrated. Shows how this method of nailing eliminates embedded sleepers, wood sub-floor or nailing strips.

What's in a Name? Folder. 8½ x 11 in. Illustrated. Enumerates advantages of a heavy service flooring that lays smooth and stays smooth.

The Marbleloid Co., 461 Eighth Ave., New York, N. Y.

The Universal Flooring for Modern Buildings. Booklet. 6¾ x 9¾ in. 32 pp. Illustrated. Describes uses and contains specifications for Marbleloid flooring, base, wainscoting, etc.

Marbleloid Flooring for Hospitals. Bulletin. 8½ x 11 in. 4 pp. Illustrated. Describes the especial features of this composition floor for hospital buildings.

Marbleloid Specifications. Booklet. 8½ x 11 in. 4 pp. Illustrated.

Marbleloid Flooring for Schools. Bulletin. 8½ x 11 in. 4 pp. Illustrated. Describes special features of this composition floor for school buildings.

Thos. Moulding Brick Company, 133 West Washington St., Chicago, Ill.

T-M-B Mastic Flooring. Catalog. 6 x 9¼ in. 16 pp. Illustrated. Includes specifications also.

Muller Co., Franklyn R., Waukegan, Ill.

Asbestone Composition Flooring. Circulars. 8½ x 11 in. Description and Specifications.

The Nairn Linoleum Company, 179 Belgrove Drive, Kearny, N. J.

Linoleum. Booklet. 5½ x 8½ in. 68 pp. Illustrated in color. Reproductions in color of Inlaid, Printed, Plain and Battleship Linoleum; also Cork Carpets and Felt Base Floor Coverings.

Oak Flooring Advertising Bureau, 1057 Ashland Block, Chicago, Ill.

Modern Oak Floors. Booklet. 6⅛ x 9¼ in. 24 pp. Illustrated. A general book that tells the complete story on Oak Flooring.

Oak Flooring, How and Where to Use it. Booklet. 3⅛ x 6⅛ in. 16 pp. Illustrated. A small, technical book showing the general rules, standard thickness and widths, how to lay, finish and care for oak floors.

FLOOR HARDENERS

General Chemical Company, The, 25 Broad Street, New York, N. Y.

Making Concrete Wear Like Iron. Booklet. 4 pp. 8½ x 11 in. Illustrated. Describes Hard-n-tyte and its application to concrete floors.

Casehardening Concrete. Folder. 3¾ x 8½ in. 6 pp. Illustrated. Describes treatment of concrete surfaces with Hard-n-tyte so that they become literally "casehardened."

The Hard-n-tyte Specification. Booklet. 8½ x 11 in. 4 pp. Gives exact specifications for concrete floor finish.

FLOOR HARDENERS (CHEMICAL)

Sonneborn Sons, Inc., L., 116 Fifth Ave., New York.

Lapidolith, the liquid chemical hardener. Complete sets of specifications for every building type in which concrete floors are used, with descriptions and results of tests.

The Truscon Laboratories, Detroit, Mich.

Agatex and Its Performances. Booklet. 8½ x 11 in. 16 pp. Describes use of Agatex Liquid Chemical for hardening cement floors.

FLOOR HARDENERS (METALLIC)

The Truscon Laboratories, Detroit, Mich.

Truscon Floor Hardener. Pamphlet. 7¾ x 5½ in. 18 pp.

FURNACES—See Heating Equipment

FURNITURE

Estey Organ Company, Brattleboro, Vt.

Pipe Organs. Complete specifications and full information furnished to the architect for pipe organ to be installed in any given residence, upon receipt of plans and other particulars.

Hampton Shops, 18 East 50th St., New York, N. Y.

Glimpses from Hampton Exhibits. Brochure. 16 pp. 5 x 7½ in. Illustrated. Shows examples of Hampton work and gives one an idea of their resources. Of interest to the client as well as to the architect

Kensington Mfg. Company, 14 East 32nd St., New York, N. Y.

Photographs and full description of hand-made furniture in all the period styles furnished promptly in response to a specific inquiry.

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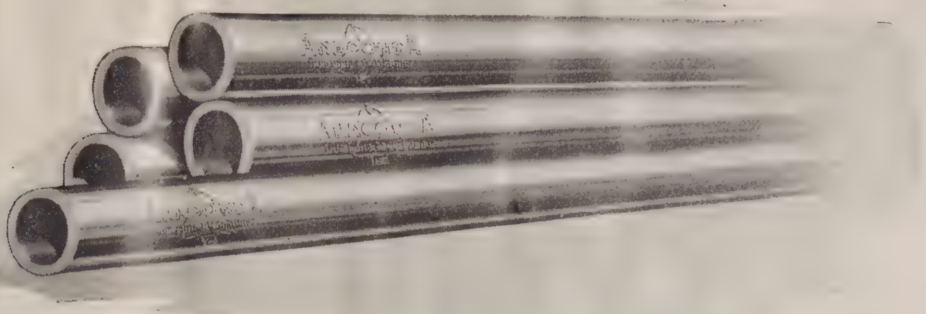

Facts *vs.* Misinformation

THE American Brass Company has learned from a two years' survey that the public has an extremely exaggerated idea of brass pipe costs. The company has, therefore, decided upon a program of educational work, including general advertising, to present the facts about the inexpensiveness and economy of Anaconda Brass Pipe.

The public will be shown just how little trademarked Anaconda Brass Pipe adds to the building cost or the plumbing cost. Actual cases will be cited showing that homes costing $15,000 can be equipped with Anaconda Brass Pipe for about $75 more than the owner would pay for inferior, corrodible pipe. Information will be provided as to the extent of the possible damage, annoyance and repair expense which can be avoided through this slight additional investment.

It is felt that architects will be interested in the announcement of this program in support of better building practice.

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ANACONDA
BRASS PIPE

SELECTED LIST OF MANUFACTURERS' PUBLICATIONS — *Continued from page 90*

FURNITURE — Continued

Kewaunee Mfg. Company, Kewaunee, Wis.

Book No. 13. 6 x 9 in. 194 pp. Illustrated. Full description of Kewaunee Vocational Equipment for domestic science, demonstration dining rooms, fitting rooms, drafting rooms, manual training and shop-equipment, kindergarten and hospital equipment and dietetic tables.

Book No. 14. 6 x 9 in. 226 pp. Illustrated. Shows Laboratory furniture for chemistry, physics, biology, zoology, electrical and physiography laboratories, medical college, hospital laboratory equipment, industrial and commercial laboratory equipment. Engineering service gratis.

Charles P. Rogers & Co., Inc., 14-16 East 33rd St., New York, N. Y.

A Guide to Buying Quality Furniture, Beds and Bedding. Booklet. 4 x 6 in. Illustrated. Describes the manufacture of good furniture as compared with the ordinary kind.

GLASS CONSTRUCTION

Mississippi Wire Glass, 220 Fifth Avenue, New York.

Mississippi Wire Glass. Catalog. 3⅞ x 8½ in. 32 pp. Illustrated Covers the complete line.

Plate Glass Mfrs. of America. First National Bank Bldg., Pittsburgh, Pa.

Plate Glass. Booklet. 5¾ x 9¼ in. 12 pp. Describes manufacture and use of plate glass, with sizes.

GRANITE—See Stone, Building

HARDWARE

Cutler Mail Chute Company, Rochester, N. Y.

Cutler Mail Chute Model F. Booklet. 4 x 9¼ in. 8 pp. Illustrated.

McKinney Mfg. Co., Pittsburgh, Pa.

McKinney Cabinet Hardware. Catalog. 6 x 9 in. 32 pp. Illustrated. Describes complete line of hardware for cabinet and furniture work.

McKinney Hardware for Sliding Doors. Booklet. 6 x 9 in. 18 pp. Illustrated. Describes different types of sliding door hardware.

Vonnegut Hardware Co., Indianapolis, Ind.

Von Duprin Self-Releasing Fire Exit Devices. Catalog. 12F 8 x 11 in. 41 pp. Illustrated.

"Saving Lives." Booklet. 3¼ x 6 in. 16 pp. Illustrated. A brief outline why Self-Releasing Fire Exit Devices should be used.

HEATING EQUIPMENT

American District Steam Company, North Tonawanda, N. Y.

Bulletin No. 150-AF. 6 x 9 in. 32 pp. Illustrated. Describes the Adsco System of Atmospheric Steam Heating and explains how it saves 20 to 30% of fuel cost. Tells how to figure radiation.

Catalog No. 21-AF. 6 x 9 in. 200 pp. Illustrated. Lists and describes the full line of equipment and devices manufactured for use on underground and interior steam mains, expansion joints, steam meters, condensation meters, traps, flange fittings, angle fittings, manhole curbs, alignment guides, etc.

Clarage Fan Company, Kalamazoo, Mich.

Catalog No. 52. 8½ x 11 in. 84 pp. Illustrated. Describes Clarage Kalamazoo Multiblade Fans and Heaters for use in schools, churches, hospitals and industrial plants. Engineering data, capacity tables and dimensions included.

James B. Clow & Sons, 534 S. Franklin Street, Chicago, Ill.

Gasteam. Catalog. 6 x 9 in. 16 pp. Illustrated. New radiator using gas for fuel.

Excelso Specialty Works, 119 Clinton St., Buffalo, N. Y.

Excelso Water Heater. Booklet. 12 pp. 3 x 6 in. Illustrated. Describing the new Excelso method of generating domestic hot water in connection with heating boilers. (Firepot Coil eliminated.)

Gorton & Lidgerwood Co., 96 Liberty Street, New York, N. Y.

Gorton Self-Feeding Boilers. Booklet. 4¼ x 7¼ in. 32 pp. Illustrated. Descriptions, specifications and prices.

Johnson Service Company, 149 Michigan St., Milwaukee, Wis.

Regulation of Temperature and Humidity. Booklet. 11¼ x 8½ in. 64 pp. Illustrated. Describes Johnson system of pneumatic, automatic regulation of temperature and humidity, and illustrates thermostats, valves, air compressors, dampers and other parts.

Johnson Electric Thermostats, Valves and Controllers. Booklet. 6⅛ x 3½ in. 24 pp. Illustrated. Excellent plates showing electric thermostats and controllers.

Kelsey Heating Company, James St., Syracuse, N. Y.

Booklet No. 5. 4 x 9 in. 32 pp. Illustrated. A dealers' booklet showing the Kelsey Warm Air Generator Method of warming and distributing air. Gives dimensions, heating capacities, weights, kind of coal recommended, and shows the mechanical and gravity system of heating homes, churches and schools.

Monroe Pipeless Booklet. 4½ x 8 in. 20 pp. Illustrated.

Monroe Tubular Heater. Booklet. 4½ x 8 in. 20 pp. Illustrated. General Booklet giving capacities, dimensions, weights, etc.

Syracuse Pipeless Booklet. 4½ x 8 in. 12 pp. Illustrated. General Booklet, giving sizes and capacities.

Kewanee Boiler Co., Kewanee, Ill.

Kewanee on the Job. Catalog. 8½ x 11 in. 80 pp. Illustrated. Showing installations of Kewanee boilers, water heaters, radiators, etc.

Catalog No. 73. 6 x 9 in. 35 pp. Illustrated. Describes Kewanee steel power boilers with complete specifications.

Minneapolis Heat Regulator Company, Minneapolis, Minn.

The Heart of the Heating Plant. Catalog. 6 x 9 in. 20 pp. Illustrated. Describing the Minneapolis Heat Regulator, its construction, application and operation for the automatic control of temperature where coal, gas, fuel oil or street steam is used.

Page Boiler Company, The Wm. H., 141 West 36th Street, New York, N. Y.

Page Boilers. Catalog. 4½ x 8 in. 84 pp. Illustrated. Descriptions with specifications of the Volunteer Round and Monarch Square Sectional Boilers; also the Monarch Up-Draft and Down-Draft Smokeless Boiler; with method for apportioning size of boiler and radiation, and other heating data.

United States Radiator Corporation, Detroit, Mich.

The Complete Line. Catalog. 3¾ x 6½ in. 269 pp. Illustrated. New edition, intended as a handy reference book for those who design or install heating and ventilating systems.

Capitol Smokeless Type Boilers. Booklet. 8½ x 11 in. 12 pp. Illustrated. Describing a new type of low-pressure heating boiler which burns soft coal without smoke.

HEATING EQUIPMENT—Continued

Utica Heater Company, Utica, N. Y.

Imperial Round and Square Boilers and Supplies. Catalog. 3½ x 6½ in. Gives complete data on small heaters.

Special Folders. 8½ x 11 in. "Warmth and Comfort," describing the scientifically correct NEW IDEA pipeless furnaces. "SUPERIOR Warm Air Pipe Furnaces," a standard line of heating equipment for over forty years. "SUPER-SMOKELESS Pipe and Pipeless Furnaces," a new and remarkably efficient warm air heater, burning cheap soft coal without smoke—utilizing the principle of the Bunsen Burner.

"Imperial Sectional Square Boilers," for hard coal heating of all types of buildings.

Utica Imperial SUPER-SMOKELESS Boiler. Catalog. 8½ x 11 in. Consists of the following seven bulletins, either loose or bound together: (1) School Heating Bulletin. (2) Public Building Bulletin. (3) Theater Heating Bulletin. (4) Churches and Religious Institutions. (5) Residences, Apartments and Hotels. (6) Offices, Industrial Buildings and Garages. (7) Technical Bulletin describing patented Bunsen Burner design and construction of the SUPER-SMOKELESS BOILER, which burns the cheapest grades of soft coal smokelessly and operates equally well with hard coal, coke or fuel oil.

HEAT REGULATORS—See Heating Equipment

HOISTS

Gillis & Geoghegan, 544 West Broadway, New York.

Hoists for Industrial Plants. Booklet. 6 x 8¾ in. 8 pp. Illustrated. Labor saving service in the lifting or lowering of lighter loads, through the use of G & G Telescopic and Non-telescopic Hoists.

Removing Ashes. Booklet. 6 x 8¾ in. 6 pp. Illustrated. Removing ashes from boiler room directly to wagon by electrically operated Telescopic Hoists.

HOLLOW TILE—See Tile, Hollow

INSULATION

Bishopric Manufacturing Co., 103 Este Ave., Cincinnati, Ohio.

For All Time and Clime. Booklet. 6 x 9 in. 48 pp. Illustrated. Describing the use of Bishopric stucco base and Bishopric plaster base.

Philip Carey Co., The, Cincinnati, Ohio.

Carey Asbestos and Magnesia Products. Catalog. 6 x 9 in. 72 pp. Illustrated.

Johns-Manville, Inc., Madison Ave. and 41st St., New York, N. Y.

Johns-Manville Service to Power Users. Catalog. 8½ x 11 in. 150 pp. Illustrated. Contains valuable data on all forms of insulations, packings, steam traps, high temperature cements, brake locks and linings, also general technical data.

United States Gypsum Company, 205 West Monroe St., Chicago, Ill.

Bulletin. 8½ x 11 in. Details and specifications for insulating roofs to prevent condensation.

United States Mineral Wool Co., 280 Madison Ave., New York, N. Y.

The Uses of Mineral Wool in Architecture. Booklet. 5¼ x 6⅝ in 24 pp. Illustrated. Describes properties of mineral wool as insulation against heat, frost, sound. Specifications and section drawings for use as a fireproofing. Rule for estimate and cost.

KITCHEN EQUIPMENT

Wm. M. Crane Company, 16–20 West 32nd St., New York, N. Y.

VULCAN Gas Ranges and Appliances. Booklet. 5 x 8 in. 50 pp. Illustrated. Describes complete line, including VULCAN SMOOTH-TOP Compact Cabinet Gas Ranges for kitchens in the home.

VULCAN Gas Equipment for Hotels, Hospitals, Restaurants, etc. Booklet. 5 x 8 in. 45 pp. Illustrated. Equipment for heavy-duty cooking requirements, with information of value to architects in planning kitchens.

Pick & Company, Albert, 208 W. Randolph St., Chicago, Ill.

School Cafeterias. Portfolio. 17 x 11 in. 44 pp. Illustrated. An exhaustive study of the problems of school feeding, with copious illustrations and blue-prints. Very valuable to the architect.

Hotel, Apartment Building, Club and Institution Installations. Portfolio. 17 x 11 in. 100 pp. Shows, mostly by plates, how the Albert Pick Company equips hotels completely from top to bottom.

Equipment for Cafeterias, Lunch Rooms, Restaurants, and Dining Rooms. Portfolio. 17 x 11 in. 86 pp. Illustrated. The last word in Cafeteria equipment to meet all requirements.

LATH, METAL AND REINFORCING

North Western Expanded Metal Co., 934 Old Colony Building, Chicago, Ill.

Designing Data. Catalog. 6 x 9 in. 94 pp. Illustrated. Describes most efficient use of Econo Expanded Metal Reinforcing.

Formless Concrete Construction. Catalog. 6 x 9 in. 80 pp. Illustrated. Describes use of T-Rib Chanelath, a form and reinforcing for concrete.

LEADERS AND GUTTERS

Copper & Brass Research Assn., 25 Broadway, New York, N. Y.

Copper Roofing. Booklet. 8½ x 11 in. 32 pp. Illustrated. Gives information regarding weights of various roofing materials. Describes up-to-date practice and methods of laying copper roofs; decorative effects and how to obtain them. Gives specifications and details. Flashings, reglets, gutters and leaders, cornices and copper-covered walls.

MAIL CHUTES

Cutler Mail Chute Company, Rochester, N. Y.

Cutler Mail Chute Model F. Booklet. 4 x 9¼ in. 8 pp. Illustrated.

MANTELS

Arnold & North, Inc., 124 East 41st St., New York, N. Y.

Booklet. 5 x 6 in. Contains photographic reproductions of a variety of old English and Colonial mantelpieces with complete information as to sizes and prices.

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SELECTED LIST OF MANUFACTURERS' PUBLICATIONS — *Continued from page 92*

MANTELS—Continued

Arthur Todhunter, 414 Madison Ave., New York, N. Y.

Mantels and Fireplace Equipment. Booklet. 8½ x 11 in. Illustrated. Separate sheet plates showing mantels installed and furnished, also andirons and grates grouped with suitable pieces, also lanterns, weather-vanes and hand-wrought hardware. All sizes and descriptions given on each plate.

MARBLE

The Georgia Marble Company, Tate, Ga. New York office, 1328 Broadway.

Why Georgia Marble is Better. Booklet. 3⅜ x 6 in. Gives analysis, physical qualities, comparison of absorption with granites, opinions of authorities, etc.

Convincing Proof. Booklet. 3⅜ x 6 in. 8 pp. Classified list of buildings and memorials in which Georgia Marble has been used, with names of Architects and Sculptors.

Tompkins-Kiel Marble Company, 505 Fifth Ave., New York, N. Y.

Reproductions in natural colors of imported and domestic marbles and stone for interior and exterior uses.

Bulletins, 9¾ x 12¾ in., illustrating buildings of various types in which Tompkins-Kiel Marble Company's imported and domestic marbles and stone have been used.

Vermont Marble Company, Adv. Dept., Proctor, Vt.

The Book of Vermont Marble. Booklet. 8½ x 11 in. 68 pp. Illustrated. A reference book for architects, describing various kinds of Vermont Marble, with illustrations and details.

Marble Banks and Modern Business. Booklet. 7¾ x 10½ in. 48 pp. Illustrated. Contains many pictures of important Vermont Marble bank work, with certain tests and analyses relating to the product.

METAL LATH—See Lath, Metal and Reinforcing

METALS

American Brass Company, Waterbury, Conn.

Illustrated pamphlet describes the use and adaptability of extruded architectural shapes to meet the architect's design.

American Sheet & Tin Plate Co., Frick Building, Pittsburgh, Pa.

Reference Book. Pocket Ed. 2½ x 4½ in. 168 pp. Illustrated. Covers the complete line of Sheet and Tin Mill Products.

Apollo and Apollo-Keystone Galvanised Sheets. Catalog. 8½ x 11 in. 20 pp. Illustrated.

Research on the Corrosion Resistance of Copper Steel. Booklet 8½ x 11 in. 24 pp. Illustrated. Technical information on results of atmospheric corrosion tests of various sheets under actual weather conditions.

Facts Simply and Briefly Told. Booklet. 8½ x 11 in. 16 pp Illustrated. Non-technical statements relating to Keystone Copper Steel.

Black Sheets and Special Sheets. Catalog. 8½ x 11 in. 28 pp. Illustrated. Describes standard grades of Black and Uncoated Sheets, together with weights, bundling tables, etc.

Bright Tin Plates. Catalog. 8½ x 11 in. 16 pp.

Bridgeport Brass Company, Bridgeport, Conn.

Seven Centuries of Brass Making. Booklet. 10½ x 8 in. 78 pp. Illustrated in color. A brief history of the ancient art of Brass Making and its early (and even recent) method of production—contrasted with that of the Electric Furnace Process—a twentieth century achievement of the Bridgeport Brass Company.

Tested High-Speed Brass Rod. Booklet. 10½ x 8 in. 16 pp. Illustrated. Short treatise on the manufacture of Brass Rod for use in Screw Machines, with particular reference to improvements originated by the Bridgeport Brass Company.

Copper & Brass Research Assn., 25 Broadway, New York, N. Y.

Copper Roofing. Booklet. 8½ x 11 in. 32 pp. Illustrated. Gives information regarding weights of various roofing materials. Describes up-to-date practice and methods of laying copper roofs; decorative effects and how to obtain them. Gives specifications and details. Flashings, reglets, gutters and leaders, cornices and copper-covered walls.

METAL TRIM—See Doors and Trim, Metal

MORTAR COLORS

Clinton Metallic Paint Co., Clinton, N. Y.

Clinton Mortar Colors. Booklet. 3½ x 6⅜ in. 8 pp. Illustrated. Complete description of Clinton Mortar Colors with color samples.

PAINTS, STAINS, VARNISHES AND WOOD FINISHES

Boston Varnish Co., Everett Station, Boston 49, Mass.

The Inviting Home. Booklet. 5½ x 8 in. 16 pp. Illustrations in colors of attractive interiors.

Set of Twelve Measured Drawings. 8½ x 11 in.

Kyanize—Its Important Place in Recent Eastern Architecture. Booklet. 6 x 9 in. 16 pp. Varnish and Enamel Specifications.

Cabot, Inc., Samuel, Boston, Mass.

Cabot's Creosote Stains. Booklet. 4 x 8½ in. 16 pp. Illustrated.

The Hockaday Company, 1823 Carroll Ave., Chicago, Ill.

Paint Mileage. Book. 8 x 10½ in. 56 pp. Illustrated. A reference book on interior painting. Describes use of paint over all sorts of surfaces, with illustrations of buildings where Hockaday has been specified. Hockaday service explained.

Martin Varnish Co., 2500 Quarry St., Chicago, Ill.

Architectural Specifications. Booklet. 8½ x 11 in. 20 pp. Illustrated. Complete guide for Architects in specifying Martin Varnish Products.

Your Floors. Booklet. 5 x 7 in. 20 pp. Illustrated. Explains fully how to finish all kinds of floors and woodwork with Martin's Pure Varnish.

De Luxe Enamel. Folder. 3½ x 7 in. 8 pp. Illustrated. Describes Martin's Enamel and shows color-card.

Finishes. Booklet. 3¼ x 6¼ in. 16 pp. Illustrated in colors. Copious illustrations in color and details of all kinds of wood-finishing.

National Lead Company, 111 Broadway, New York, N. Y.

Handy Book on Painting. Book. 5½ x 3¼ in. 100 pp. Gives directions and formulas for painting various surfaces of wood, plaster, metal, etc., both interior and exterior.

Red Lead in Paste Form. Booklet. 6¼ x 3½ in. 16 pp. Illustrated. Directions and formulas for painting metals.

Came Lead. Booklet. 8¾ x 6 in. 12 pp. Illustrated. Describes various styles of lead cames.

Cinch Anchoring Specialties. Booklet. 6 x 3½ in. 20 pp. Illustrated. Describes complete line of expansion bolts.

The Ripolin Company, Cleveland, Ohio

Ripolin Specification Book. 8 x 10¼ in. 12 pp. Complete specifications and general instructions for the application of Ripolin, the original Holland enamel paint. Also directions for proper finishing of wood, metal, plaster, concrete, brick and other surfaces.

Ruberoid Co., The (formerly the Standard Paint Co.), 95 Madison Avenue, New York, N. Y.

Preservative Coatings. Booklet. 6 x 9 in. 15 pp. Illustrated. Presents in a concise manner the properties and uses of the Ruberoid Company's various paint preparations.

Smith & Co., Edward, P. O. Box 76, City Hall Station, New York, N. Y.

Architect's Hand Book. 4¾ x 7½ in. 24 pp. Specifications and suggestions for painting, varnishing, enameling, etc.

Sonneborn Sons, Inc., L., Dept. 4, 116 Fifth Avenue, New York.

Paint Specifications. Booklet. 8½ x 10¾ in. 4 pp.

The Truscon Laboratories, Detroit, Mich.

Architects' Specification Handbook. 8½ x 11 in. 108 pp. Complete specifications covering Waterproofings, Dampproofings, Oilproofings, Technical Finishes, Steel Paints, Mill White Paints, Floor Hardeners and Varnishes.

PARTITIONS

Improved Office Partition Company, 25 Grant St., Elmhurst, L. I.

Telesco Partition. Catalog. 8¼ x 11 in. 14 pp. Illustrated. Shows typical offices laid out with Telesco partitions, cuts of finished partition units in various woods. Gives specifications and cuts of buildings using Telesco.

Detailed Instructions for erecting Telesco Partitions. Booklet. 24 pp. 8½ x 11 in. Illustrated. Complete instructions, with cuts and drawings, showing how easily Telesco Partition can be erected.

Richards-Wilcox Mfg. Co., Aurora, Ill.

Partitions. Booklet. 7 x 10 in. 32 pp. Illustrated. Describes complete line of track and hangers for all styles of sliding, parallel, accordion and flush door partitions.

The J. G. Wilson Corporation, 11 East 36th St., New York, N. Y.

Folding Partitions. Booklet. 8½ x 11 in. 16 pp. Illustrated. Covers the field of folding partitions for churches, schools, hotels, clubs and public institutions.

Rolling Partitions, Hygienic and Disappearing Door Wardrobes. Booklet. 6 x 9 in. 32 pp. Illustrated. Describes rolling partitions, particularly in churches and schools, and wardrobes as installed in schools and public institutions.

PARTITIONS, WIRE

Page Steel & Wire Company, Bridgeport, Conn.

Page Standard Panel Partition. Booklet. 8½ x 11 in. 6 pp. Illustrated. Uses and advantages of Wire Partition, with Page Standard Panel Specifications. Valuable to architects.

PIPE

American Brass Company, Waterbury, Conn.

Bulletin B-1, "Brass Pipe for Water Service." 8½ x 11 in. 28 pp. Illustrated. Gives schedule of weights and sizes (I. P. S.) of seamless brass and copper pipe, shows typical installations of brass pipe, and gives general discussion of the corrosive effect of water on iron, steel and brass pipe.

Bridgeport Brass Company, Bridgeport, Conn.

Bulletin No. 15. Brass Pipe and Piping. Booklet. 8 x 10½ in. 48 pp. Illustrated. When and how to use Brass Pipe. Brass Pipe compared with iron and steel pipe for hot water service. Corrosion. Description of manufacture of Bridgeport Plumrite Brass Pipe.

A. M. Byers Company, 235 Water St., Pittsburgh, Pa.

Bulletin 26-A. "What Is Wrought Iron?" 8 x 10¾ in. 40 pp. Illustrated. Descriptions of materials and processes employed in manufacturing Byers genuine wrought iron pipe. Factors influencing corrosion. Gives table of pipe sizes, weights, dimensions, tests, etc., and tabulated records of the life of iron and steel pipe in various kinds of service.

Bulletin 30. An Investigation of Pipe Corrosion in Hot Water Service. 8 x 10¾ in. 20 pp. Illustrated. Shows service records of iron, steel and brass pipe used for hot and cold water supply lines in 129 Pittsburgh Apartment Buildings.

Bulletin 32. Corrosion of Wrought Iron, Cast Iron and Steel Pipe in House Drainage Systems. 8 x 10¾ in. 32 pp. Illustrated. Data obtained through investigations conducted in New York and Chicago by Dr. Wm. P. Gerhard, C.E., and Thomas J. Claffy, Asst. Chief San. Inspector, city of Chicago.

Bulletin 38. The Installation Cost of Pipe. 32 pp. 8 x 10¾ in. Illustrated. Cost analyses of 20 different pipe installations, in power and industrial plants, office buildings, hotels, residences, etc.

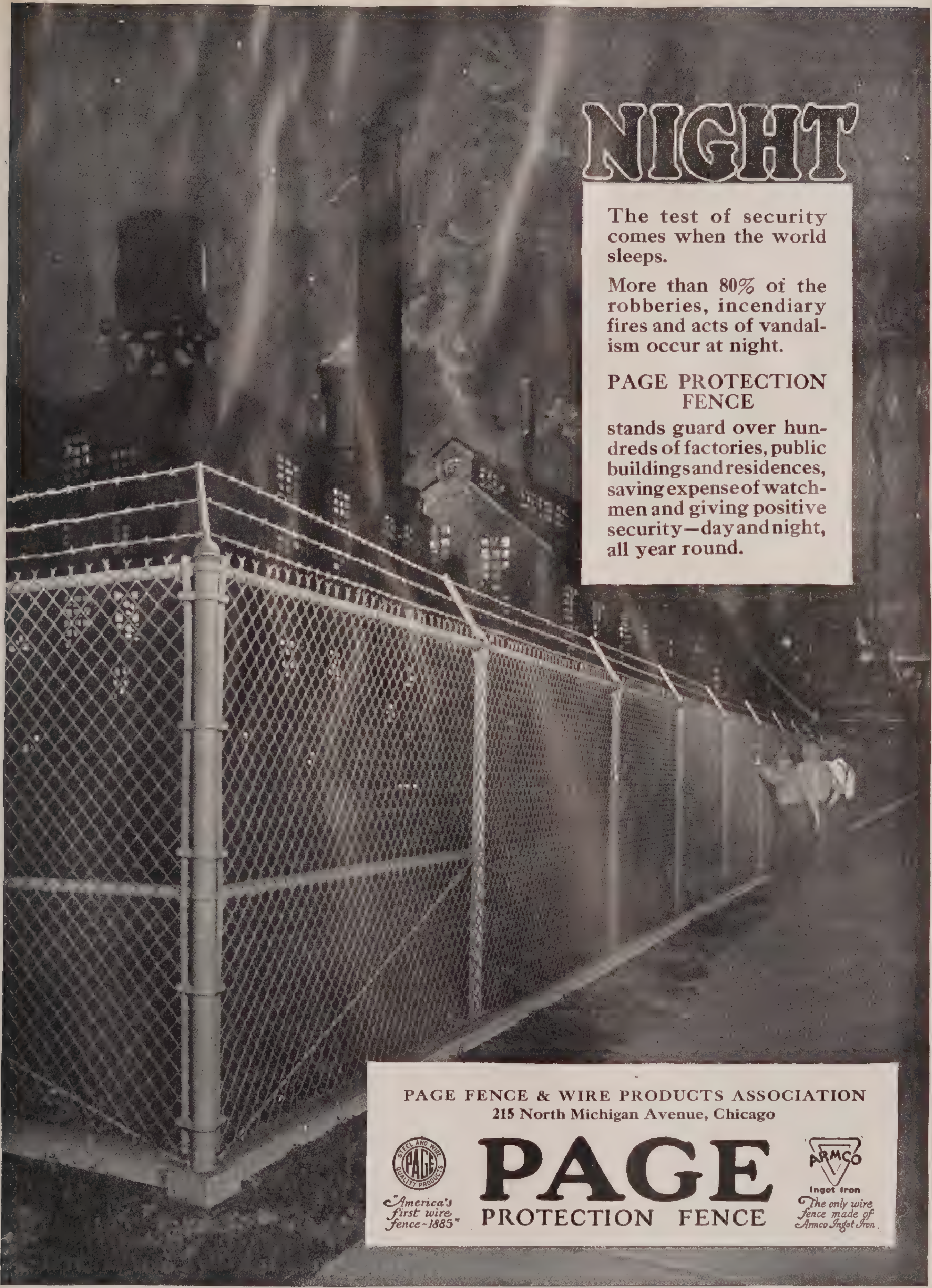
Clow & Sons, James B., 534 S. Franklin Street, Chicago, Ill.

Catalog "A." 4 x 6½ in. 706 pp. Illustrated. Shows a full line of steam, gas and water works supplies.

National Tube Co., Frick Building, Pittsburgh, Pa.

"National" Bulletin No. 2. Corrosion of Hot Water Pipe. (8½ x 11 in. 24 pp.) Illustrated. In this bulletin is summed up the most important research dealing with hot water systems. The text matter consists of seven investigations by authorities on this subject.

"National" Bulletin No. 3. The Protection of Pipe Against Internal Corrosion. (8½ x 11 in. 20 pp.) Illustrated. Discusses various causes of corrosion and details are given of the deactivating and deaerating systems for eliminating or retarding corrosion in hot water supply lines.



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SELECTED LIST OF MANUFACTURERS' PUBLICATIONS — *Continued from page 94*

PIPE — Continued

National Tube Co.—Continued

"National" Bulletin No. 25. "National" Pipe in Large Buildings. 8½ x 11 in. 88 pp. This bulletin contains 254 illustrations of prominent buildings of all types, containing "National" Pipe and considerable engineering data of value to architects, engineers, etc.

Modern Welded Pipe. Book of 88 pages (8½ x 11 in.), profusely illustrated with halftone and line engravings of the important operations in the manufacture of pipe.

Reading Iron Company, Reading, Pa.

Reading Genuine Wrought Iron Pipe in the Making and in Service. Bulletin No. 1. 8½ x 11 in. 32 pp. Illustrated. History of the Reading Iron Company. Origin of wrought iron—description of each process of manufacture of both buttweld and lapweld pipe—Reading Pipe in various fields.

Book of Standards. Booklet. 5 x 7 in. 48 pp. Illustrated. Complete tables showing dimensions, tests and list prices on each of the 552 different kinds of Reading Tubular goods. Two simple tests for distinguishing genuine wrought iron pipe.

The Painted Molecule. Booklet. 4 x 9 in. 8 pp. Illustrated. A brief, non-technical description of the reasons for the longer life of Reading Iron Pipe, with instances of actual service.

The Ultimate Cost. Booklet. 5¼ x 7¼ in. 24 pp. Illustrated in two colors. A comparison in actual figures of the initial cost and the ultimate cost of plumbing and heating systems in several kinds of homes.

PLUMBING EQUIPMENT

American Brass Company, Waterbury, Conn.

Benedict Nickel. Illustrated pamphlet descriptive of Benedict Nickel White Metal for high-grade plumbing fixtures.

Bridgeport Brass Company, Bridgeport, Conn.

Plumbing Supplies. Booklet. 10½ x 8 in. 20 pp. Illustrated. Describes a few of the different plumbing supplies manufactured by the Bridgeport Brass Company.

Brunswick-Balke-Collender Co., 623 S. Wabash Avenue, Chicago, Ill.

Whale-bone-ite Seat. Booklet. 3½ x 6¼ in. 4 pp. Illustrated.

Whale-bone-ite Seat. Booklet. 3½ x 6¼ in. 8 pp. Illustrated.

Clow & Sons, James B., 534 S. Franklin Street, Chicago, Ill.

Catalog "M." 9¼ x 12 in. 184 pp. Illustrated. Shows complete line of plumbing fixtures for Schools, Railroads and Industrial Plants

Crane Company, 836 S. Michigan Avenue, Chicago, Ill.

Crane Products in World Wide Use. Catalog. 5 x 9½ in. 24 pp. Illustrated.

Plumbing Suggestions for Home Builders. Catalog. 3 x 6 in. 80 pp. Illustrated.

Plumbing Suggestions for Industrial Plants. Catalog. 4 x 6½ in. 43 pp. Illustrated.

Eljer Company, 15 E. Van Buren St., Chicago, Ill.

The Standardized Sixteen. Booklet. 3¾ x 6¾ in. 16 pp. Illustrated. Describes fully the complete Eljer line of standardized plumbing equipment, with diagrams, weights, measurements and copious illustrations.

Standardized Sixteen. Circular. 3¾ x 6¾ in. 18 pp. Illustrated.

Complete catalog. 3¾ x 6¾ in. 104 pp. Illustrated.

Kohler Co., Kohler, Wis.

Catalog F. 7½ x 10⅝ in. 216 pp. Illustrates and describes the complete line of Kohler trade-marked plumbing ware.

Roughing-In Measurement Binder, 5 x 8 in., containing loose-leaf sheets on all staple fixtures.

Speakman Company, Wilmington, Del.

Speakman Showers and Fixtures. Catalog. 4½ x 7½ in. 250 pp. Illustrated. Catalog of Modern Showers and Brass Plumbing Fixtures, with drawings showing layouts, measurements, etc.

Toned Up In Ten Minutes. Booklet. 7½ x 10½ in. 16 pp. Illustrated. Modern Showers and Washups for Industrial Plants, showing the sanitary method of washing in running water.

Wolff Manufacturing Company, 255 No. Hoyne Ave., Chicago, Ill.

Plumbing Suggestions. Catalog. 3¼ x 6 in. 50 pp. Illustrated. Illustrating, describing and pricing Wolff Quality Plumbing Fixtures for residential installation.

PUMPS

Goulds Mfg. Co., The, Seneca Falls, N. Y.

Set of Twenty Bulletins. 7½ x 10⅝ in. 12 to 32 pp. each. Illustrated. Covers complete line of power and centrifugal pumps for all services.

Catalog "K." 6 x 9 in. 216 pp. Illustrated. Covers complete line of smaller size pumps.

Kewanee Private Utilities Co., 442 Franklin St., Kewanee, Ill.

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Ramp Buildings Corporation, 115 Broad St., New York, N. Y.

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Truscon Steel Company, 250 W. Lafayette Blvd., Detroit, Mich.

Shearing Stresses in Reinforced Concrete Beams. Booklet. 8½ x 11 in. 12 pp.

ROOFING

American Brass Company, Waterbury, Conn.

Service Sheets 43-1 and 43-2, standard specifications and methods of laying copper roofings, flashings, hips, valleys, decks, gutters and leaders.

American Sheet & Tin Plate Co., Frick Bldg., Pittsburgh, Pa.

Better Buildings. Catalog. 8½ x 11 in. 32 pp. Describes Corrugated and Formed Sheet Steel Roofing and Siding Products, black, painted and galvanized, with directions for application of various patterns of Sheet Steel Roofing in various types of construction.

Copper—Its Effect Upon Steel for Roofing Tin. Catalog. 8½ x 11 in. 28 pp. Illustrated. Describes the merits of high grade roofing tin plates and the advantages of the copper-steel alloy.

"The Testimony of a Decade." Booklet. 8½ x 11 in. 16 pp., with Graphic Chart and illustration showing losses to various Iron and Steel Sheets for roofing, from atmospheric corrosion.

Copper & Brass Research Assn., 25 Broadway, New York, N. Y.

Copper Roofing. Booklet. 8½ x 11 in. 32 pp. Illustrated. Gives information regarding weights of various roofing materials. Describes up-to-date practice and methods of laying copper roofs; decorative effects and how to obtain them. Gives specifications and details. Flashings, reglets, gutters and leaders, cornices and copper-covered walls.

Creo-Dipt Company, 1025 Oliver St., North Tonawanda, N. Y.

Architectural Service Sheets. 8½ x 11 in. Illustrated. Working drawings of construction, with standard specifications for design and construction of same.

Illinois Zinc Company, 332 S. Michigan Ave., Chicago, Ill.

Corrugated Sheets of Pure Rolled Zinc. Booklet. 3⅝ x 8½ in. 8 pp. Illustrated. Facts regarding adaptability of zinc for roofing. Specifications of Corrugated Zinc Sheets. Weights per square. Comparative gauge lists. Table of safe loads.

The Roof That's Always New. Booklet. 3⅝ x 6 in. 12 pp. Illustrated. Story of Illinois Zinc Shingles, their everlasting and artistic qualities. Information regarding a complete zinc roof, shingles, starting piece, valley, ridge and hip piece.

"How to Lay Illinois Zinc Shingles." Leaflet. 8½ x 11 in. 4 pp. Illustrated. Instructions for making a roof of Illinois Zinc Shingles using zinc clad nails, zinc starting piece, hip, zinc valleys, zinc ridge and hip pieces.

Johns-Manville, Inc., Madison Ave. & 41st St., New York, N. Y.

Johns-Manville Building Materials. Book. 8½ x 11 in. 100 pp. Illustrated. A comprehensive catalog of various types of roofing for all forms of construction. Details of wall, floor and ceiling insulation; asbestos wood for fireproof construction; waterproofing, etc.

Johns-Manville Asbestos Shingles. Booklet. 8½ x 11 in. 24 pp. Illustrated. This booklet is profusely illustrated in colors, showing some very artistic blends of asbestos shingles with various types of architecture. Contains many valuable suggestions for the architect.

Ruberoid Co., The (formerly the Standard Paint Co.), 95 Madison Avenue, New York, N. Y.

Instructions for Laying Built-up Roofs. Booklet. 8½ x 11 in. Illustrated.

Ruberoid Facts Worth Knowing. Booklet. 6 x 9 in. 16 pp. Illustrated.

Ruberoid Strip-shingle. Booklet. 3½ x 6¼ in. 16 pp. Illustrated in color.

Ruberoid Unit-shingle. Booklet. 3½ x 6¼ in. Illustrated in color.

SAFETY TREADS

Universal Safety Tread Co., 40 Court St., Boston, Mass.

The Universal Safety Metal Tread. Booklet. 8½ x 11 in. 16 pp. Illustrated. Describes Safety Treads, with lead inserts in steel base, suitable for use on iron, wood or concrete stairs. Also the flat type, with "Alundum" surface, as well as special ladder treads for ships, power-house and engine-room open string stairways.

SASH CHAIN

American Chain Company, Inc., Bridgeport, Conn.

American Sash Chain. Booklet. 3½ x 6 in. 8 pp. Illustrated. Describes and illustrates American Sash Chain and Sash Fixtures.

Smith & Egge Mfg. Co., The, Bridgeport, Conn.

Booklet. 6¾ x 9 in. 42 pp. Illustrated. Covers a complete line of chains, hardware and specialties.

SASH CORD

Samson Cordage Works, Boston, Mass.

Catalog. 3½ x 6¼ in. 24 pp. Illustrated. Covers complete line of rope and cord.

SCREENS

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SEWAGE DISPOSAL

Kewanee Private Utilities, 442 Franklin St., Kewanee, Ill.

Specification Sheets. 7¾ x 10¼ in. 40 pp. Illustrated. Detailed drawings and specifications covering water supply and sewage disposal systems.

SHEATHING

Bishopric Manufacturing Co., 103 Este Ave., Cincinnati, Ohio

For All Time and Clime. Booklet. 6 x 9 in. 48 pp. Illustrated. Describing the use of Bishopric stucco base and Bishopric plaster base.

STEEL DRESSERS

Janes & Kirtland, 133–135 West 44th St., New York, N. Y.

The White House Line. Booklet. 7¾ x 5¼ in. 24 pp. Illustrated. Describes and illustrates in detail WHITE HOUSE Steel Dressers and some of the separate units. Also contains typical layout and list of some of our clients.

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Wrigley Building, Chicago, Ill.
Graham, Anderson, Probst & White, Archts.
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SELECTED LIST OF MANUFACTURERS' PUBLICATIONS — *Continued from page 96*

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Harrison Granite Company, 200 Fifth Avenue, New York, N. Y.
Harrison Granite Company, Clientele. 3¾ x 8¾ in. 24 pp. Illustrated. A partial list of clients with illustrations of examples of monuments and mausoleums.

Indiana Limestone Quarrymen's Association, Box 766, Bedford, Indiana.
Volume 3. Series A-3. Standard Specifications for Cut Indiana Limestone work. 8½ x 11 in. 56 pp. Containing specifications and supplementary data relating to the best methods of specifying and using this stone for all building purposes.
Vol. 1. Series B. Indiana Limestone Library. 6 x 9 in. 36 pp. Illustrated. Giving general information regarding Indiana Limestone, its physical characteristics, etc.
Vol. 27. Series B. Designs for Houses of Indiana Limestone. 8½ x 11 in. 32 pp. Illustrated. Being the best designs submitted in competition for a detached residence faced with Indiana Limestone conducted by *The Architectural Review.*
Volume 4, Series "B." Booklet. New Edition. 8½ x 11 in. 64 pp. Illustrated. Indiana Limestone as used in Banks.

Tompkins-Kiel Marble Company, 505 Fifth Ave., New York, N. Y.
Reproductions in natural colors of imported and domestic marbles and stone for interior and exterior uses.
Bulletins, 9¾ x 12¾ in., illustrating buildings of various types in which Tompkins-Kiel Marble Company's imported and domestic marbles and stone have been used.

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Kawneer Co., The, Niles, Mich.
A Collection of Successful Designs. Catalog. 9¼ x 6½ in. 64 pp. Illustrated. Showing by use of drawings and photographs many types of Kawneer Solid Copper Store Fronts.

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Bishopric Manufacturing Co., 103 Este Ave., Cincinnati, Ohio.
For All Time and Clime. Booklet. 6 x 9 in. 48 pp. Illustrated Describing the use of Bishopric stucco base and Bishopric plaster base.

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Bishopric Manufacturing Co., 103 Este Ave., Cincinnati, Ohio.
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STUCCO, MAGNESITE

American Magnestone Corporation, Springfield, Ill.
Catalog. 13 pp. Describes the quality, beauty and strength of Magnestone.

American Materials Company, 101 Park Avenue, New York; Weed Street and Sheffield Avenue, Chicago, Ill.
Elastica, the Stucco of Permanent Beauty. Catalog. 8½ x 11 in. 32 pp. Illustrated. Treatise on composition and application of Elastica Stucco.

Muller & Co., Franklyn R., Waukegan, Ill.
Everlastic Magnesite Stucco. Booklet. 8½ x 11 in.

United States Materials Co., Weed Street and Sheffield Avenue, Chicago, Ill. See American Materials Co.

TERRA COTTA

National Terra Cotta Society, 1 Madison Avenue, New York, N. Y.
Standard Construction, Indexed, bound volume. 10½ x 16 in. 90 pp. 70 Illustrations. Standard forms of terra cotta construction with short article.
"The School." 10½ x 13½ in. 34 pp. 92 Illustrations. Types of school buildings with short descriptive articles. Volume I, brochure series.
"Better Banks." 10½ x 13½ in. Illustrated. Banks of various sizes, with short descriptive articles.
"Terra Cotta Defined." 10½ x 13½ in. Complete description of Terra Cotta and its uses.

The New Jersey Terra Cotta Co., Singer Bldg., New York, N. Y.
Store Fronts in Architectural Terra Cotta. Booklet. 8½ x 11 in. 44 pp. Illustrated. Photographs, measured drawings, designs and illustrations of decorative motifs make up an interesting booklet which will be forwarded upon request.

Northwestern Terra Cotta Co., The, 2525 Clybourn Ave., Chicago, Ill.
Booklet. 8½ x 11 in. 77 pp. Illustrated. Showing in a concise way the usefulness of terra cotta.

THERMOSTATS—See Heating Equipment

TILE, FLOOR AND WALL

Associated Tile Manufacturers, The, Beaver Falls, Pa.
Basic Information. Booklet. 7½ x 10⅝ in. 24 pp. Illustrated. Ask for booklet K-200.
A publication issued for architects, engineers and educators to acquaint them with methods of grading, derivation of sizes and shapes, variety of colors, kind of finishes, nomenclature and ingredients and processes insofar as they lead to a better understanding of the product and its uses.
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Associated Tile Manufacturers, The—Continued
The Basic Specification proper gives in detail the procedure to be followed with respect to any kind of tile installation in connection with practically every type of construction. The Related Documents or work sheets are designed to call attention to optional application methods and materials.
Swimming Pools. Booklet. 8½ x 11 in. 32 pp. Illustrated. Issued for the use of architects and engineers as a handbook on swimming pools and their construction.
Bringing the Crowds to Your Market. Booklet. 8½ x 11 in. 16 pp. Illustrated in color. Shows use of tile for the modern sanitary market.

TILE, HOLLOW

Hollow Building Tile Association, Dept. 1812, Conway Bldg., Chicago, Ill.
Handbook of Hollow Building Tile Construction. 8½ x 11 in. 104 pp. Illustrated. Complete treatise on most approved methods of hollow tile building construction and fireproofing.

National Fire Proofing Co., 250 Federal St., Pittsburgh, Pa.
Standard Wall Construction Bulletin 174. 8½ x 11 in. 32 pp. Illustrated. A treatise on the subject of hollow tile wall construction.
Industrial Housing Bulletin 172. 8½ x 11 in. 14 pp. Illustrated. Photographs and floor plans of typical workingmen's homes.
Natco on the Farm. 8½ x 11 in. 38 pp. Illustrated. A treatise on the subject of fire safe and permanent farm building construction.
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The Spencer Turbine Company, Hartford, Conn.
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Gorton & Lidgerwood Company, 96 Liberty St., New York, N. Y.
Gorton Quarter-Turn Packing-Lock Valves. Booklet. 4¼ x 7¼ in. 32 pp. Illustrated. Describing a new type of valve for all systems of steam, hot water and vacuum heating.

Jenkins Bros., 80 White Street, New York.
The Valve Behind a Good Heating System. Booklet. 4½ x 7¼ in. 16 pp. Color plates. Description of Jenkins Radiator Valves for steam and hot water, and brass valves used as boiler connections.
Jenkins Valves for Plumbing Service. Booklet. 4½ x 7¼ in. 16 pp. Illustrated. Description of Jenkins Brass Globe, Angle Check and Gate Valves commonly used in home plumbing, and Iron Body Valves used for larger plumbing installations.

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Burlington Venetian Blind Co., Burlington, Vt.
Venetian Blinds Booklet. 4½ x 7¼ in. 32 pp. Illustrated. Describes the "Burlington" Venetian blinds, method of operation, advantages of installation to obtain perfect control of light in the room.

The J. G. Wilson Corporation, 11 East 36th St., New York, N. Y.
Wilson Venetian Blinds and Awnings. Booklet. 6 x 9 in. 32 pp. Illustrated. Shows typical application of these light-regulating devices.

VENTILATION

Clarage Fan Company, Kalamazoo, Mich.
Catalog No. 52. 8½ x 11 in. 84 pp. Illustrated. Describes Clarage Kalamazoo Multiblade Fans and Heaters for use in schools, churches, hospitals and industrial plants. Engineering data, capacity tables and dimensions included.

WALL BOARDS

Carey Co., The Philip, Cincinnati, Ohio.
Carey Board for Better Building. Catalog. 6 x 9 in. 32 pp. Illustrated.

United States Gypsum Company, 205 West Monroe St., Chicago, Ill.
Walls of Worth. Booklet. 8½ x 11 in. 24 pp. Illustrated. Describes Sheetrock, the fireproof wall board, its advantages and uses.

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Sandusky Cement Co., Dept. F., Cleveland, Ohio.
Medusa Waterproofing. Booklet. 6¾ x 9 in. 38 pp. Illustrated.

Sonneborn Sons, Inc., L., 116 Fifth Ave., New York.
Pamphlet. 3¾ x 8¾ inches. 8 pp. Explanation of waterproofing principles. Specifications for waterproofing walls, floors, swimming pools and treatment of concrete, stucco and mortar.

The Truscon Laboratories, Detroit, Mich.
Science and Practice of Integral Waterproofing. 4 x 9 in. 33 pp. Illustrated. Discusses why concrete requires waterproofing and properties an integral waterproofing must possess. Full specifications for waterproofing mass concrete, cement stucco and cement plaster coat.

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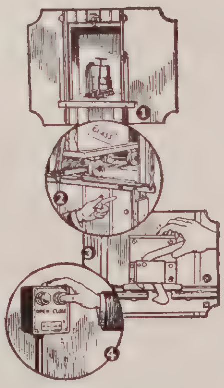

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Protecting N. Y. Water Supply. Booklet. 10 x 7 in. 24 pp. Illustrated. Describes the chlorinating equipment used for sterilizing N. Y. City water supply; also equipment suitable for sterilizing water supplies of municipalities, industrial plants, private residences, etc.

WATER SOFTENERS

Permutit Company, The, 440 Fourth Ave., New York, N. Y.
Permutit-Water softened to No (Zero) Hardness. Booklet. 8½ x 11 in. 32 pp. Describing the original Zeolite process of softening water to zero hardness. An essential for homes, hotels, apartment houses, swimming pools, laundries, textile mills, paper mills, ice plants, etc., in hard water districts.

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The Higgin Manufacturing Co., Newport, Ky.
Higgin All-Metal Weather Strips. Booklet. 6 x 9 in. 12 pp. Illustrated in colors. Describes various types of Higgin Weather Strips for sealing windows and doors against cold and dust.

WINDOW HARDWARE, CASEMENT

Hoffman Mfg. Co., Andrew, 900 Steger Bldg., Chicago, Ill.
Hoffman Casement Fixtures. Architects' Portfolio. 8½ x 11 in. 30 pp. Loose-leaf. Scale details for mill-work, installation, etc., in new and old work.

Richards-Wilcox Mfg. Co., Aurora, Ill.
Casement Window Hardware. Booklet. 24 pp. 8½ x 11 in. Illustrated. Shows typical installations, detail drawings, construction details, blue-prints if desired. Describes AiR-Way Multifold Window hardware.

WINDOWS, CASEMENT

Crittall Casement Window Co., 2703 East Atwater Street, Detroit, Mich.
Catalog No. 18. 9 x 12 in. 56 pp. Illustrated.

Hoffman Mfg. Co., Andrew, 900 Steger Bldg., Chicago, Ill.
Hoffman Casements. Architects' Portfolio. 8½ x 11 in. 30 pp. Loose-leaf. Scale details for mill-work, installation, etc., in new and old work.

Hope & Sons, Henry, 103 Park Avenue, New York.
Catalog. 12¼ x 18½ in. 30 pp. Illustrated. Full size details of outward and inward opening casements.

International Casement Company, Jamestown, N. Y.
International Casements. Catalog. 8½ x 11 in. 224 pp. Illustrated. Valuable book, containing photographs and measured drawings of all types of buildings, showing casement windows.

David Lupton's Sons Co., Allegheny Ave. and Tulip St., Philadelphia, Pa.
Casements and Double Hung Windows. Catalog. 8½ x 11 in. 44 pp. Illustrated. Shows new Lupton Casements and Double Hung Windows, with profuse illustrations and full details.

WINDOWS, STEEL and BRONZE

The Kawneer Company, Niles, Mich.
Kawneer Simplex Windows. Catalog. 8½ x 10½ in. 16 pp. Illustrated. Complete information, with measured details, of Kawneer Simplex Weightless Reversible Window Fixtures, made of solid bronze. Shows installations in residences and buildings of all sorts.
Detail Sheets and Installation Instructions. Valuable for architects and builders.

David Lupton's Sons Co., Allegheny Ave. and Tulip St., Philadelphia, Pa.
Lupton Service—Products No. 11. Book. 8½ x 11 in. 192 pp. Illustrated. The full line of Lupton products described and illustrated. Separate chapter on Designing Service. Many new types of steel sash for apartments, hotels, etc., shown.
Catalog No. 110. 8½ x 11 in. 72 pp. Illustrated. A condensed version of the No. 11 or general catalog. The new Lupton Projected Sash completely described.
Air and Light in Machine Shops. Booklet. 6 x 9 in. 42 pp. Illustrated. The proper building layout and selection of the right types of steel sash for best results in daylighting and ventilating in machine shops.

Truscon Steel Company, 250 W. Lafayette Blvd., Detroit, Mich.
Truscon Steel Windows. Catalog. 8½ x 11 in. 80 pp. Illustrated. Contains complete data on all types of Truscon Steel Windows.

WIRE

Page Steel & Wire Company, Bridgeport, Conn.
American Ingot Iron Wire, Electrical and Mechanical. Booklet 4 x 6½ in. 32 pp. Illustrated. Presents in convenient form data and tables pertaining to the properties of American Ingot Iron Wire. Listed in parallel columns for ready comparison with other commercial wire.

WOOD

American Walnut Mfrs. Association, 618 So. Michigan Blvd., Chicago, Ill.
American Walnut. Booklet. 7 x 9 in. 45 pp. Illustrated. A very useful and interesting little book on the use of Walnut in Fine Furniture with illustrations of pieces by the most notable furniture-makers from the time of the Renaissance down to the present.
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103 Park Avenue, New York

THE MASTER BUILDERS CO.
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February 16, 1922

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Very truly yours,
COMMONWEALTH ENGINEERING CORP.
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WORK on the building of the Dodge Sales and Engineering Company, New York City, progressed without the loss of a single working day at temperatures ranging from 15 degrees above zero, owing to Master Mix being used in the brick mortar. *General Contractor*, Charles L. Fraser, New York. *Architects*, Shape, Brady & Peterkin, New York.

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Sales Offices in 70 Cities

For specifications see pages 202, 203, 7th Edition, Sweet's Engineering Catalog, and pages 104, 105, 17th Architectural Edition.

Master Mix for Mortar

Architects, engineers and contractors find BRIXMENT mortar best for winter

In addition to greater strength, endurance, plasticity and ease of working, finer architectural possibilities and economy in mixing and laying up the wall, Brixment possesses a certain oily content that repels moisture and reduces the likelihood of freezing to a minimum.

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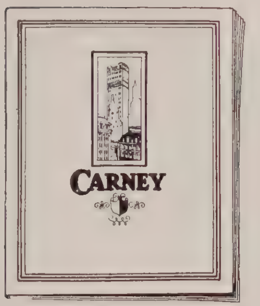

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CARNEY
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Specifications: 1 part Carney, 4 parts sand

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The curious method of filling portland cement sacks—filling them upside down after they have been tied—is a striking example of progress made in industrial processes.

Until twenty years ago, cement sacks were filled practically as all other sacks always had been. You had a huge bin of this finer-than-flour material. A workman at the door of the bin hung a sack up, with its mouth open, on a wooden frame and filled it with an ordinary shovel. Then he set it on a scale, and with a hand scoop adjusted the weight of the contents to the exact 94 pounds required, after which he tied the sack by hand and tossed it on a truck to be hauled into a freight car.

That was the way as little as twenty years ago, and no one had thought much of doing it differently.

But now what happens?

The cement is taken from the bin by an automatic conveyor—a moving belt or bucket chain—and elevated and dumped into the hopper of a filling machine. This is a small bin with an elaborate mechanism including a fan inside; and at the bottom of it is a 1-inch spout through which the cement flows like water The filler sits at the spout. Sacks have been brought to him already tied at the top but with an opening guarded by a valve at the bottom. The filler slips the opening over the spout and turns on the cement. When the sack is filled to exactly 94 pounds it tips a scale, automatically turns off the cement, and with a little push from the filler falls on another moving belt that carries it out and drops it at the freight car door.

By the old method, a team of four men could fill and load 1,600 sacks a day. By the new method, a similar team can fill and load 8,000.

The filling machine is costly, and royalties must be paid on the valve sack process, but the new arrangement has meant a considerable labor saving. It has meant especially that the manufacturers have been able to get their product out more promptly to users during the rush period of summer and fall. For in that period labor of the kind required for sacking and loading is generally hard to get.

Even with the improvements, a medium sized plant—one producing a million barrels of cement a year and employing not more than 300 people altogether—must normally employ 60 people in its sacking and loading department.

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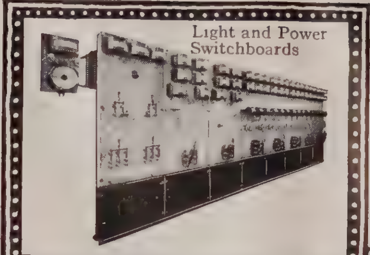

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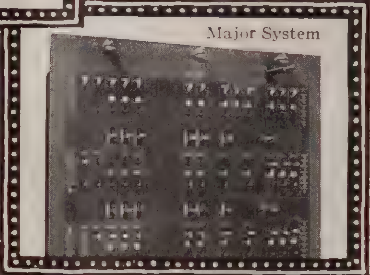

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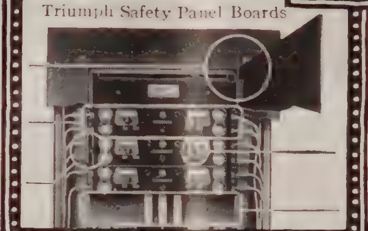

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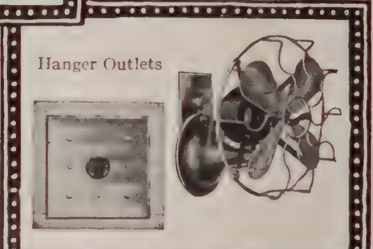

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"A finished Job"

—finished in satisfaction.

—finished in *finish*—the quality of all **H&H** devices is above reproach.

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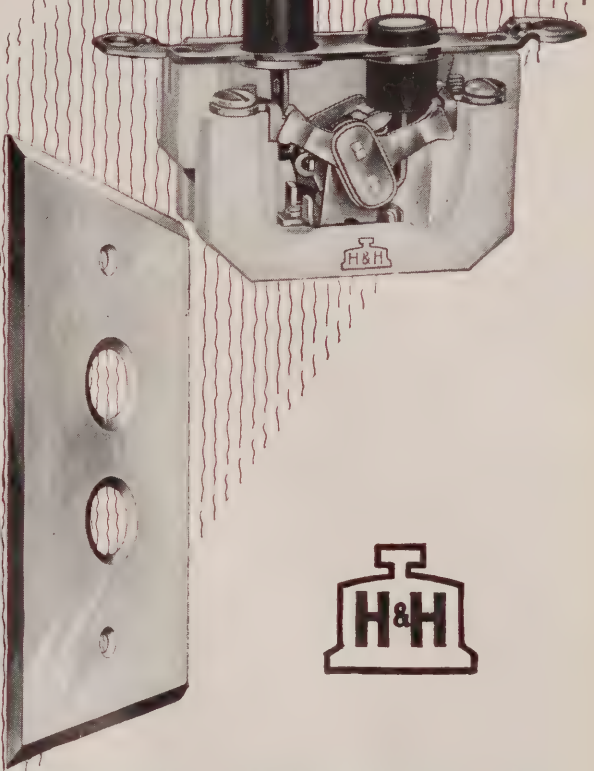
enable the contractor to offer a "finished" job on a competitive basis. Throughout, their whole construction evidences expert designing and manufacturing ability which accrues only with years of experience. Liberal insulation, heavy current carrying parts, and over-size springs help to make Nutmeg Switches last long beyond the average life of ordinary devices.



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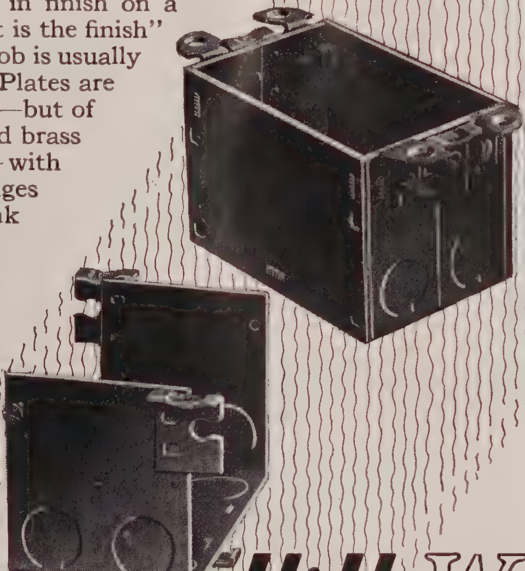
Actually as well as figuratively the last word in finish on a switch job. "It is the finish" by which the job is usually judged. Duro Plates are stamped—yes—but of 0.040 gage solid brass—not steel—with reinforced edges and deep sunk screw and button holes.



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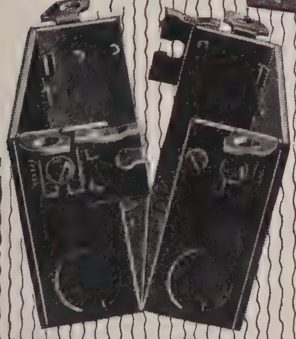

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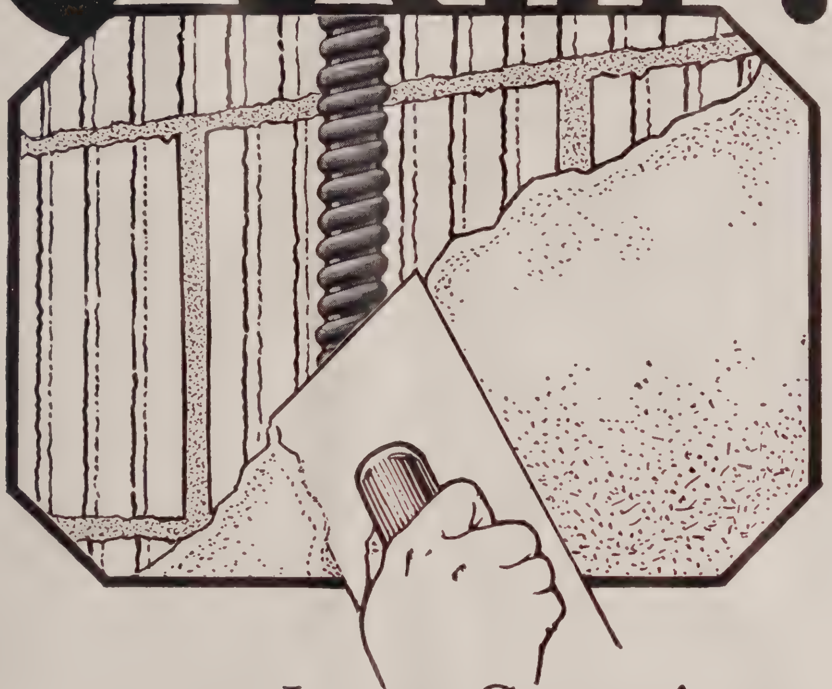

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With OVALFLEX, you can now locate convenience outlets anywhere—on inside partitions or outside walls, because:

> OVALFLEX—an armored cable flat in shape and extremely flexible—can be laid directly on the surface of brick, tile or concrete walls, without cutting or grooving the basic materials, and covered with the usual thickness of plaster.

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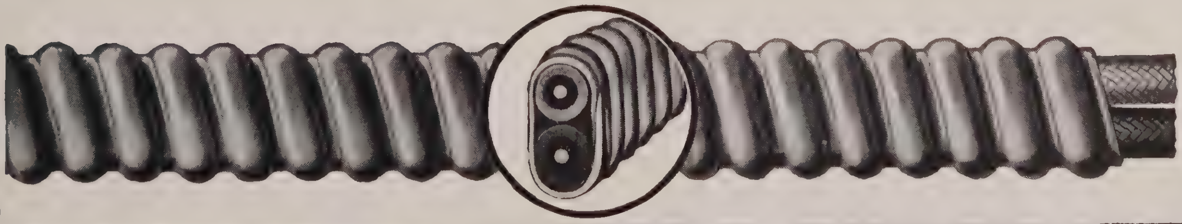

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SOUND WELDS

After being suitably rolled to obtain physical uniformity, the mild steel used in "NATIONAL" Pipe is reheated, bent to form and welded according to the best pipe mill practice.

The welding qualities of the metal are so good, and the welding operation so nicely controlled, that the result is practically predetermined — a sound weld and a

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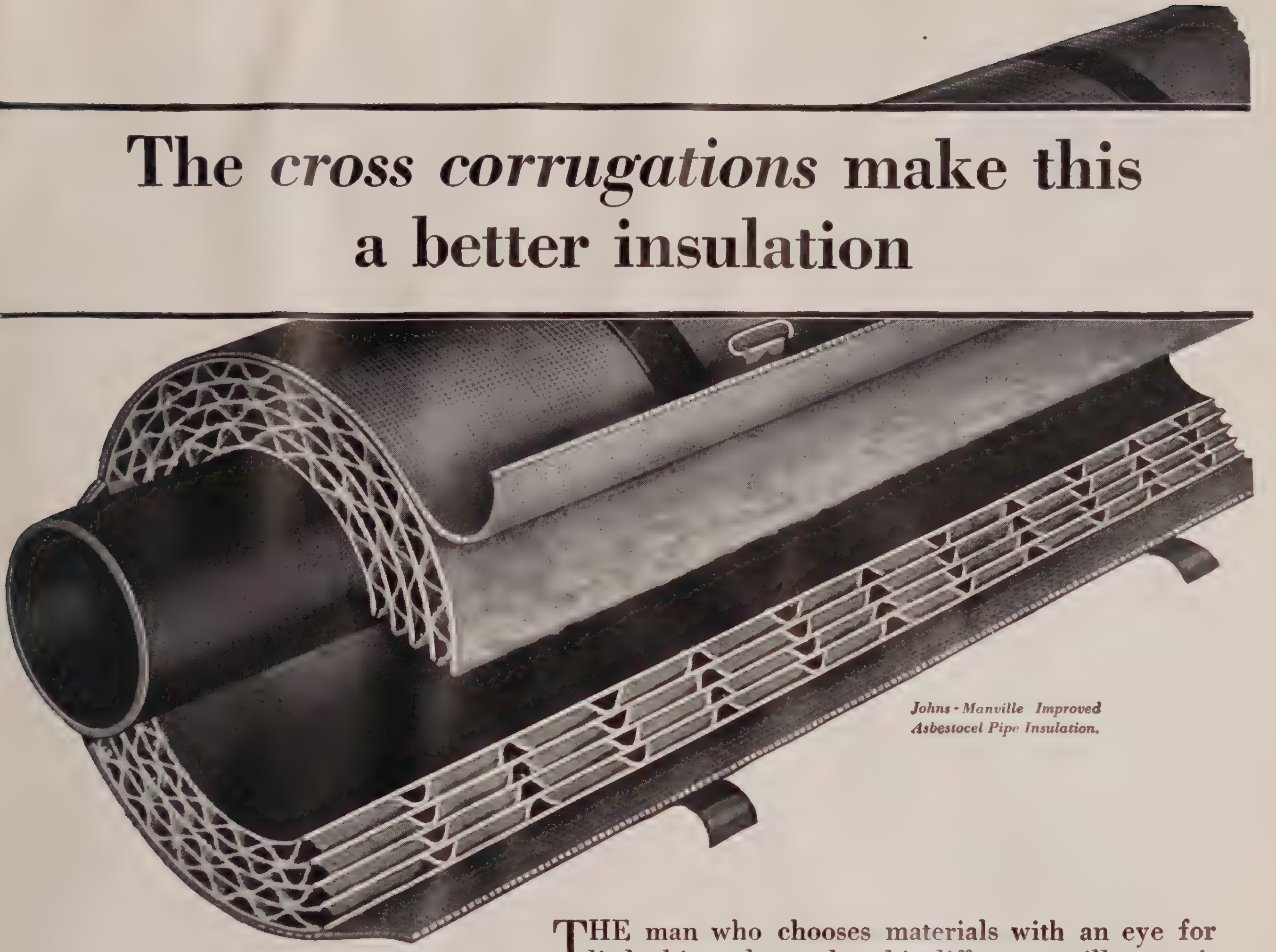

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THE man who chooses materials with an eye for little things that make a big difference, will appreciate the value of the "cross corrugation" in Improved Asbestocel Pipe Insulation.

Most Insulations are merely corrugated along the pipe. Air circulates in these open corrugations and leaks out, carrying heat along with it. The cross corrugations of Improved Asbestocel retard such circulation by dividing the lengthwise corrugations into a series of closed cells.

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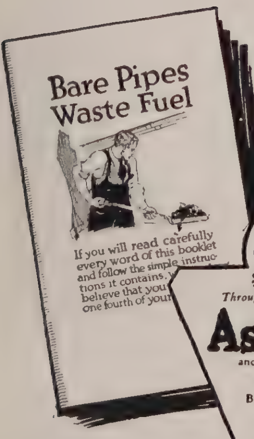

Bare Pipes Waste Fuel

If you will read carefully every word of this booklet and follow the simple instructions it contains, believe that you one fourth of your

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For the Protection of Building Investments

Buildings were for ages regarded as man's best monuments. But within the last 40 years, building practices have been revolutionized by the introduction of plumbing, heating, electric, refrigeration and other systems which are dependent on piping exposed to corrosive attack from within.

And these arterial systems are mostly inaccessible—buried in walls and floors —which, when failures occur, entail record breaking replacement costs.

So one is forced to ask: What is the monumental value of these modern structures with their bewildering network of pipes? In other words, what will be their upkeep cost and their investment value? *To answer these questions, look to the piping.*

For the protection of building investments, painstaking architects and engineers choose Byers pipe. They prefer to stake their good names upon a half century of *performance* of Byers pipe rather than on the unsupported promises of cheaper materials. Hence the wide spread use of Byers pipe for buildings of every character.

Big life insurance companies so thoroughly appreciate the close relation of investment value to quality of pipe, that it plays an important role in their decision to lend money on buildings.

If you want to know WHY *Byers pipe is dependable send for bulletin No. 26-A, "What is Wrought Iron?"*

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Established 1864

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BYERS PIPE

GENUINE WROUGHT IRON

Look for the Name and Year rolled in every length

Some Recent Buildings Equipped with Byers Pipe

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When the Knickerbocker Hotel
was converted into an office building

Knickerbocker Hotel, 42nd Street and Broadway, New York City
Erected in 1902
Bridgeport Plumrite Brass Pipe installed for both hot and cold water systems

Bridgeport BRASS CO TRADE MARK

Same building after conversion into office building. At the time reconstruction was planned, examination of piping was made and showed Bridgeport Plumrite Brass Pipe to be still in perfect condition after 19 years of service

Its Plumrite Brass Piping
was found to be still in perfect condition

A FEW years ago the Hotel Knickerbocker, at 42nd Street and Broadway, New York City, was one of the country's most famous hotels. Above the ceiling of its magnificent main floor were located the mains distributing hot and cold water to the risers. At such a location a leak would have caused very serious damage. But there was no leak. The pipe was Bridgeport Plumrite Brass Pipe.

Plumrite is quickly and efficiently installed because it is correctly annealed; easy to work and free threading, every thread sharp and clean. Properly installed, Plumrite will last as long as the building. This is confirmed by the perfect record of Plumrite in the Knickerbocker Hotel, and by the fact that when this hotel was recently converted into an office building, examination of the pipe showed the Plumrite installation to still be in perfect condition, after nineteen years of service.

BRIDGEPORT BRASS COMPANY, Bridgeport, Conn.

Bridgeport Plumrite *The Improved* **Brass Pipe**
REG. U. S. PAT. OFF.

if you are at all interested in the subject of water service piping we shall be glad to send you, a copy of our book, "Brass Pipe and Piping." It deals with corrosion, its theory and prevention; discusses the advantages and disadvantages of the various pipe metals, and gives instructions for handling brass pipe, laying out installations and figuring costs. Copies are gratis on request — use this coupon.

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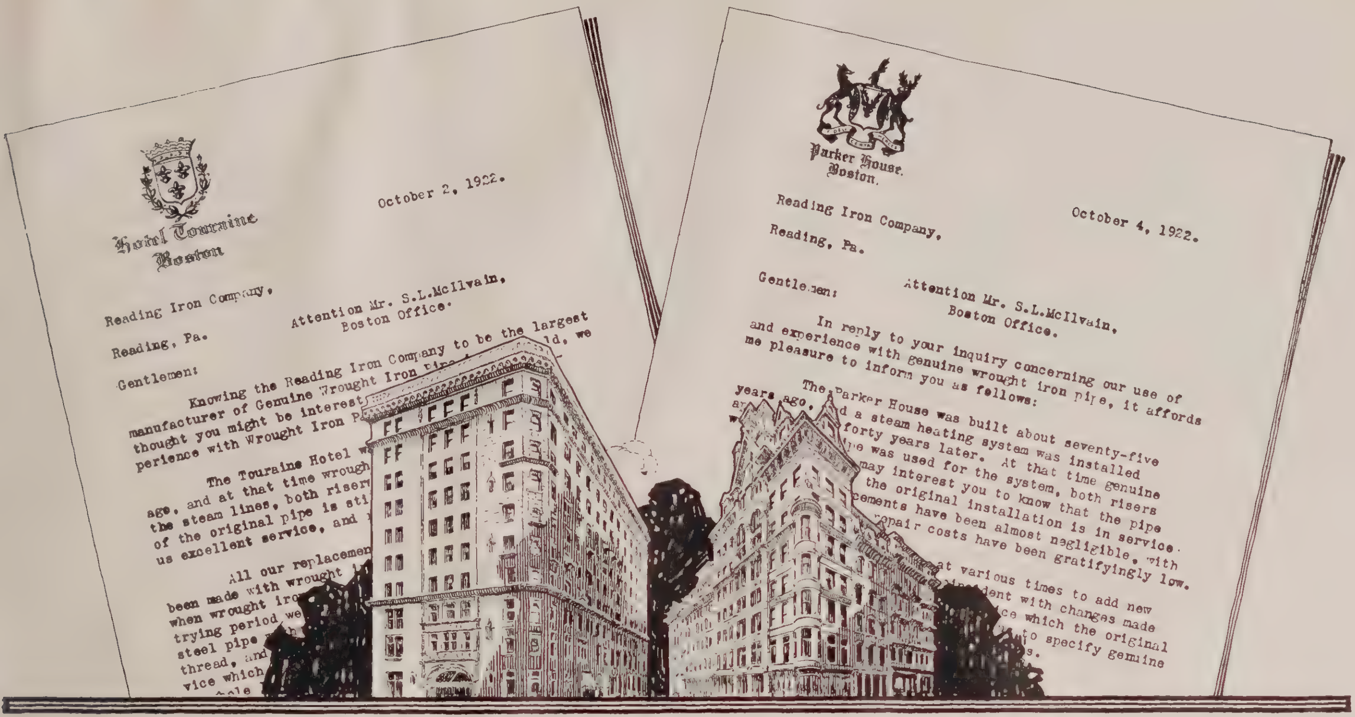

Hotel Touraine
Boston

October 2, 1922.

Reading Iron Company,
Reading, Pa.

Attention Mr. S.L.McIlvain,
Boston Office.

Gentlemen:

Knowing the Reading Iron Company to be the largest
manufacturer of Genuine Wrought Iron ld, we
thought you might be interest
perience with Wrought Iron P

The Touraine Hotel w
age, and at that time wrough
the steam lines, both riser
of the original pipe is sti
us excellent service, and

All our replacemen
been made with wrought
when wrought iro
trying period we
steel pipe
thread, and
vice which

Parker House.
Boston.

Reading Iron Company,
Reading, Pa.

October 4, 1922.

Gentlemen:

Attention Mr. S.L.McIlvain,
Boston Office.

In reply to your inquiry concerning our use of
and experience with genuine wrought iron pipe, it affords
me pleasure to inform you as follows:

The Parker House was built about seventy-five
years ago, d a steam heating system was installed
forty years later. At that time genuine
was used for the system, both risers
may interest you to know that the pipe
the original installation is in service.
cements have been almost negligible, with
repair costs have been gratifyingly low.

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Mr. J. H. Rice is chief engineer of the Parker House, one of Boston's leading hotels. Mr. C. W. Moore holds a similar position of equal importance with the Hotel Touraine in the same city. The steam lines of both hotels are of genuine wrought iron pipe, and the experiences of both men—in point of endurance, ease of threading, and freedom from replacements—have been the same.

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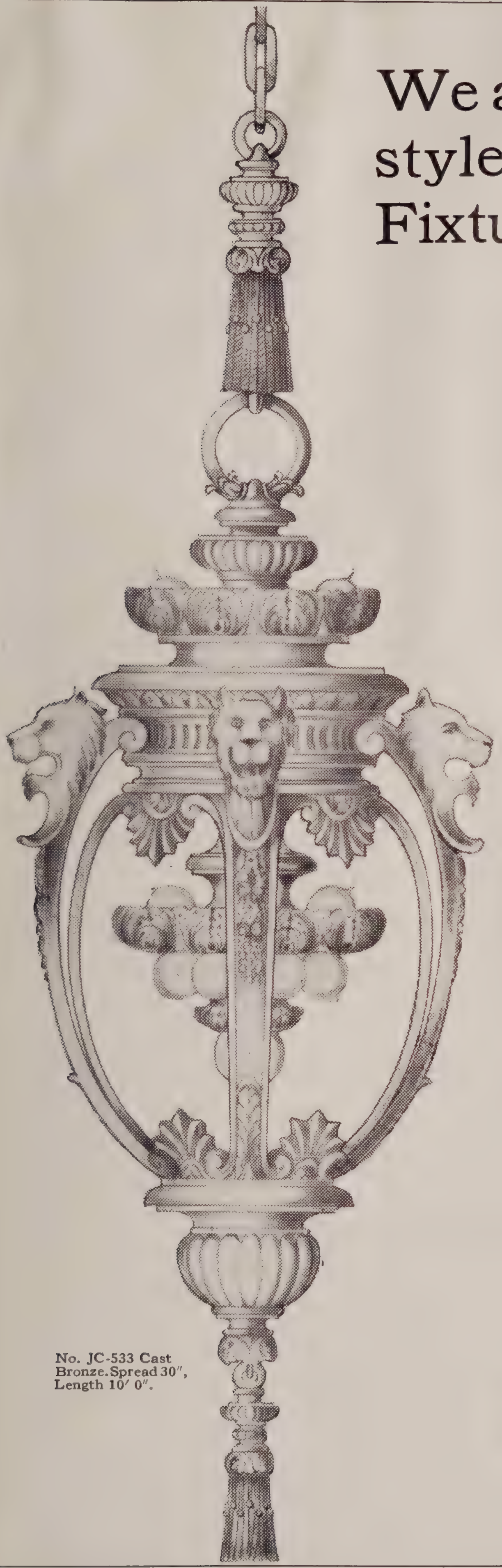

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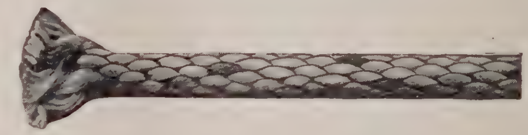

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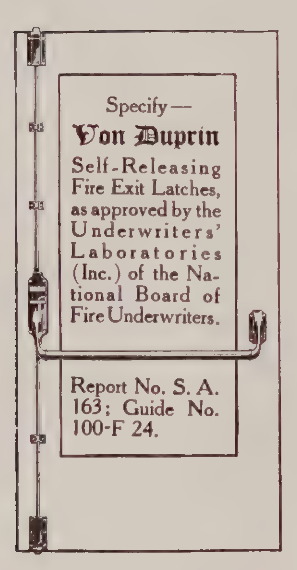

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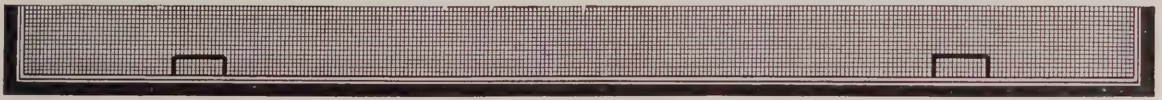

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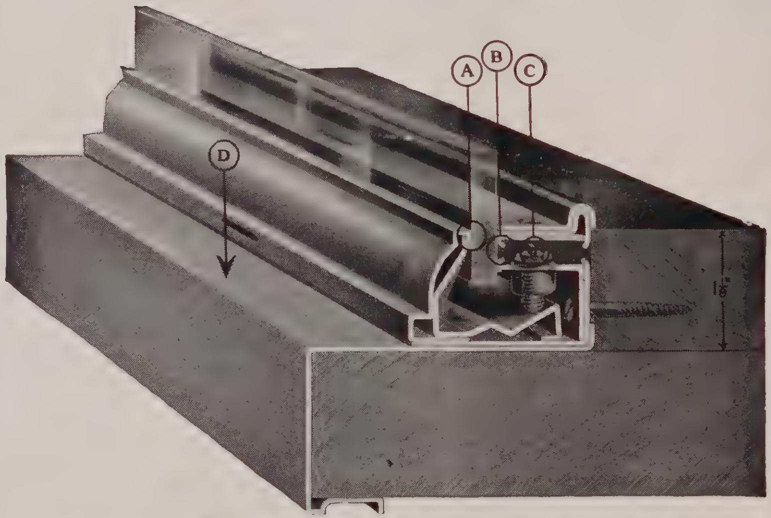

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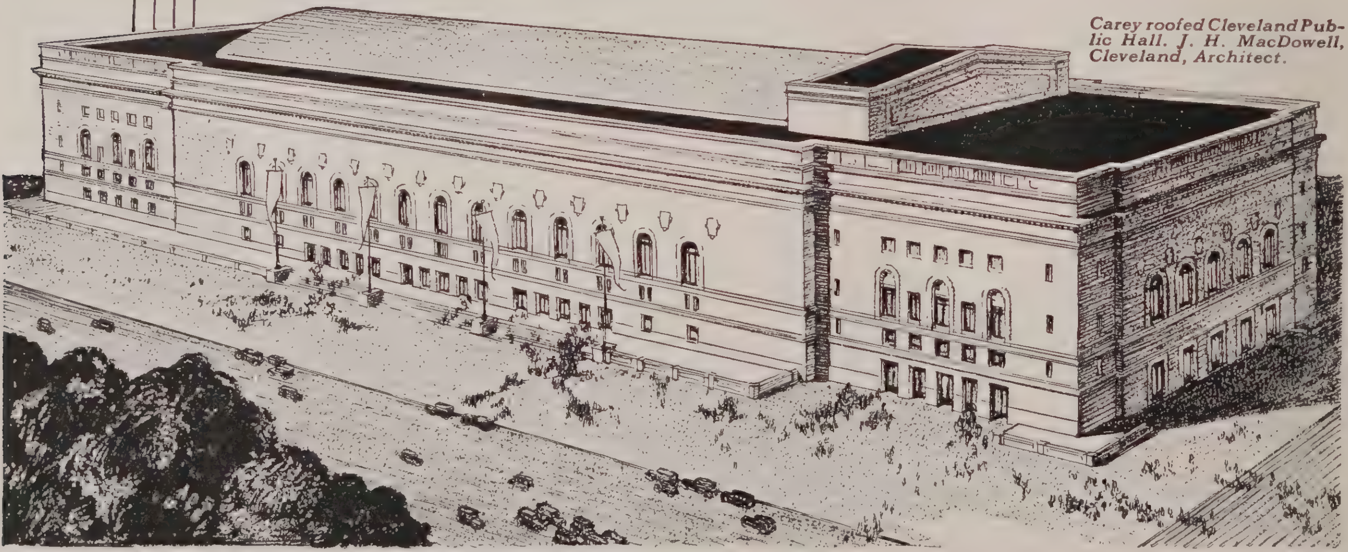

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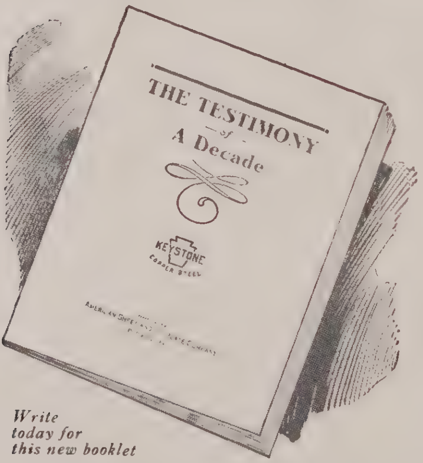

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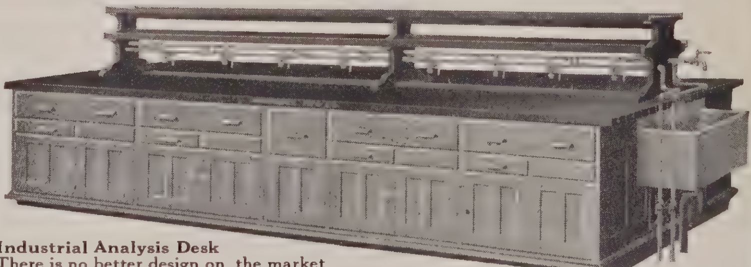

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2"	2,000 ft.	3"	1,100 ft.
1¼"	1,800 ft.	2"	2,000 ft.
1"	1,200 ft.	1¼"	1,800 ft.
¾"	1,000 ft.	1"	1,800 ft.
½"	8,000 ft.	¾"	1,100 ft.
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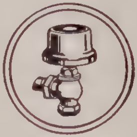

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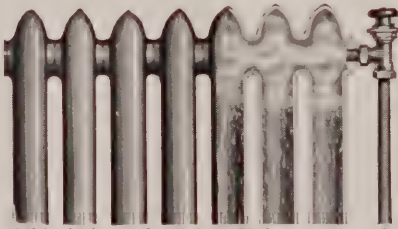

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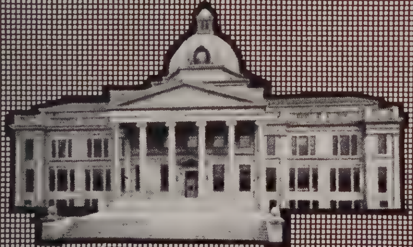

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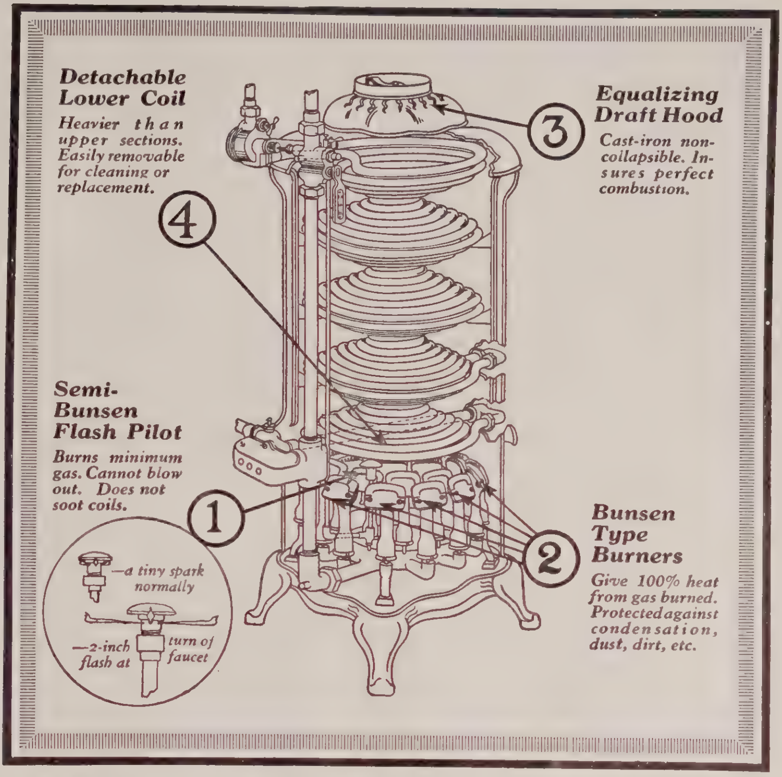
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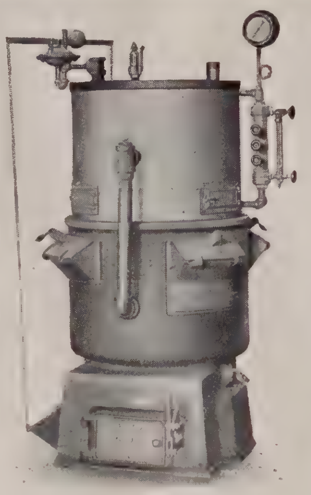

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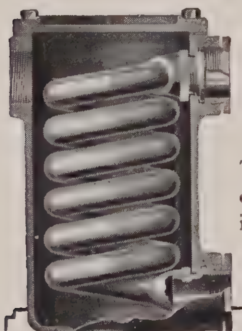

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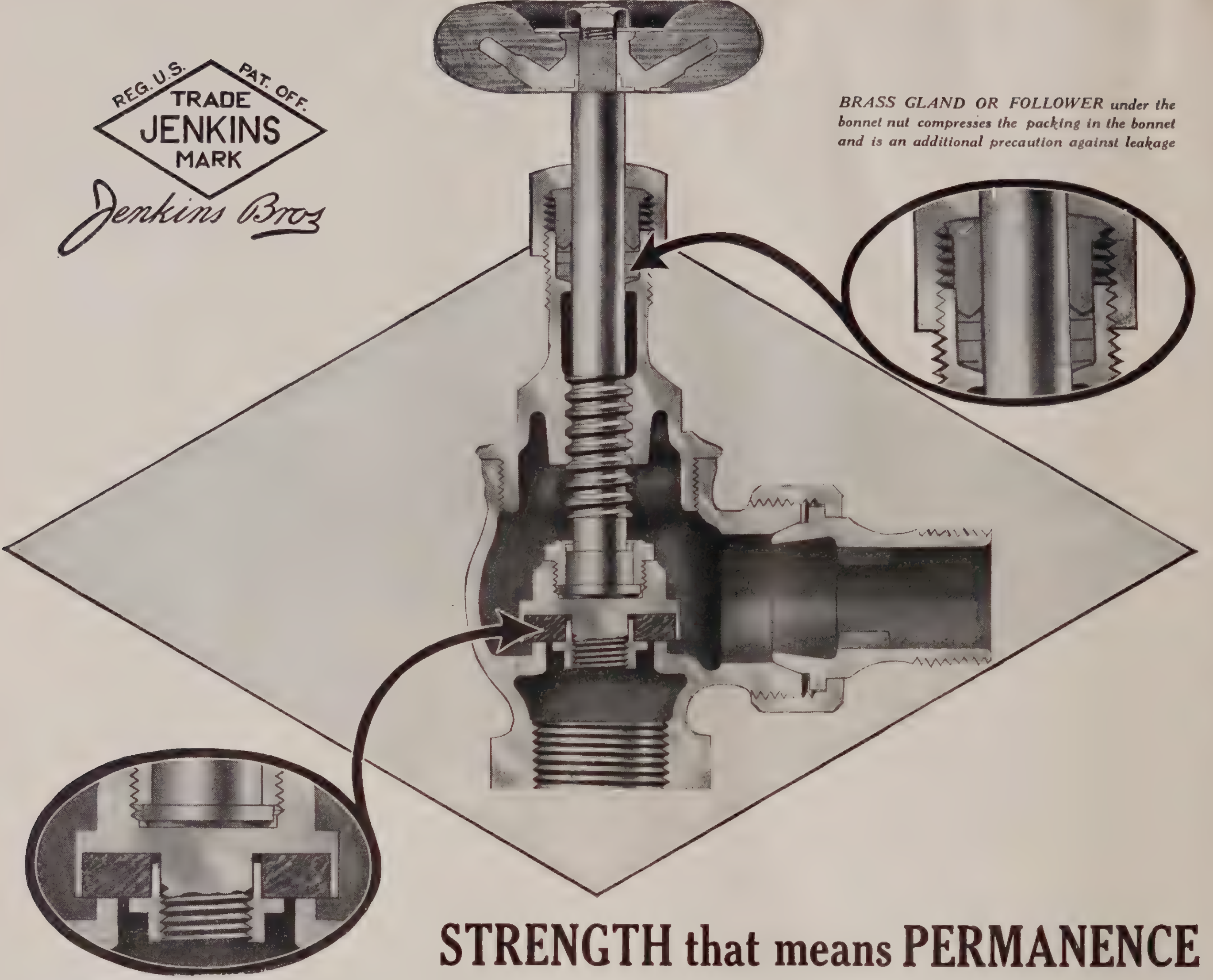

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Fig. 168. Brass Radiator Angle Valve with union. Shown above in sectional view

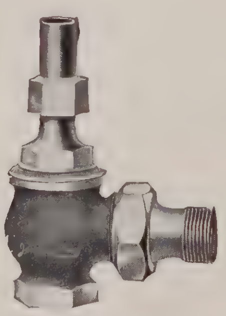

Fig. 170. Brass Radiator Angle Valve with Lock Shield

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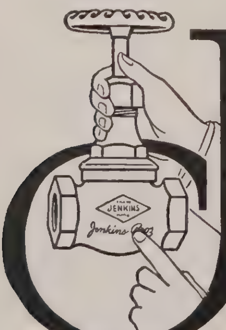

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Turn now to pages 89 to 100 of this issue and select those you need. Send us the list and we will see that you are supplied.

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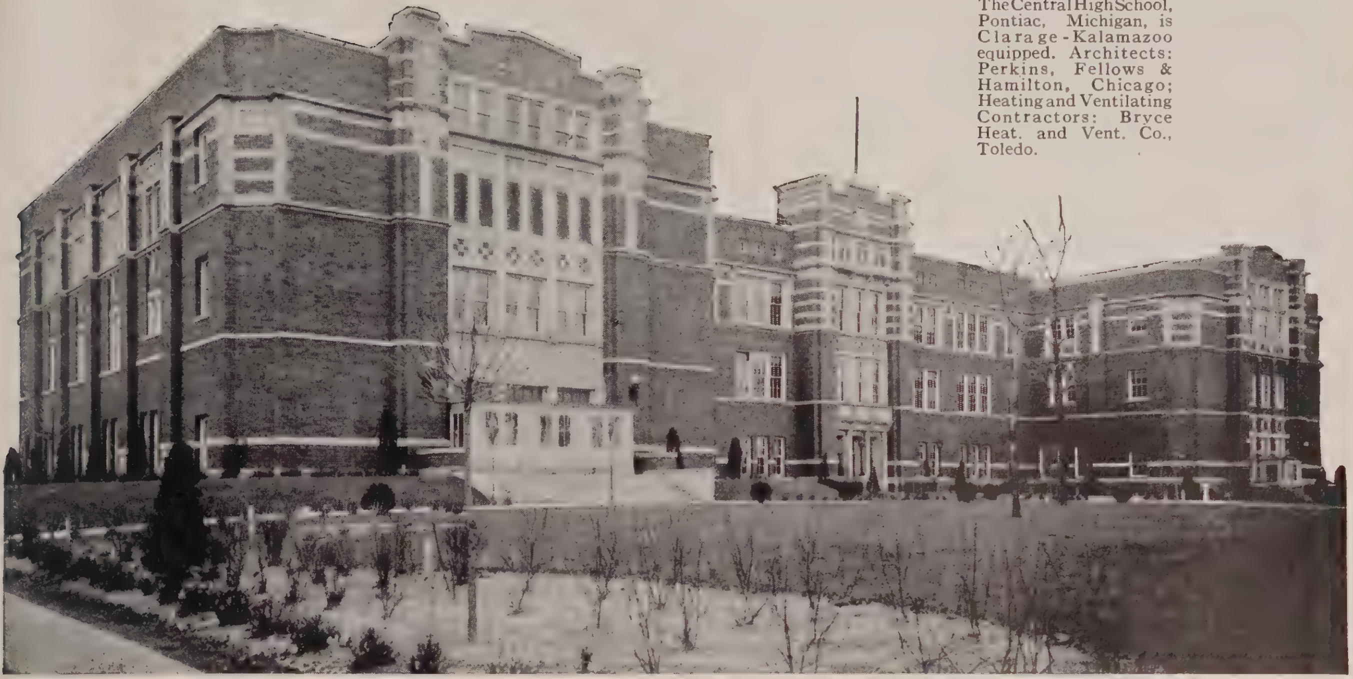

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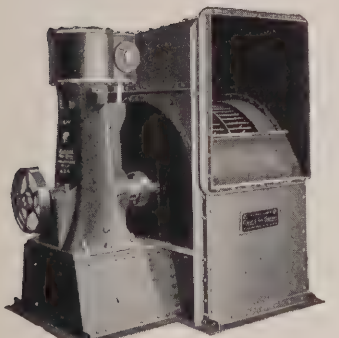

THE illustration above shows a large Clarage-Kalamazoo Multiblade Fan direct-connected to a Clarage-Kalamazoo Type-V Steam Engine. Multiblade Fans are made in sizes to meet all requirements; large sizes may be dismantled for passage through ordinary openings; made with direction of discharge to suit all conditions. Type-V Engine sets standard of quality for small engines—as famous as the fan; steam and oil consumption remarkably low; gives reliable and trouble-free service.

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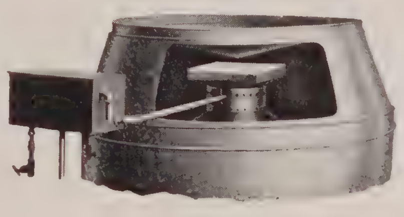

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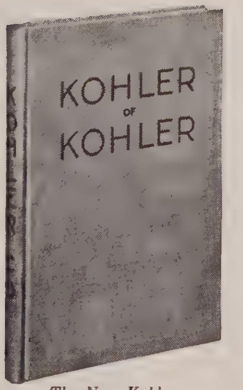

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Catalogs of this nature add materially to the working equipment of an architect's office. Perhaps an architect or a specification writer possesses (theoretically at least) the knowledge which forms the subject matter of this catalog, but it is well to have it on hand in permanent and readily accessible form, classified and tabulated for handy reference.

U. S. GYPSUM CO., Chicago. "How to Get the Best Results from Gypsum Plaster."

Getting successful results from a material of any kind is largely a matter of using material in the proper way. Such a statement might appear trite and unnecessary, but the fact remains that building materials of many kinds are being improperly used, and the unsatisfactory results which logically follow are generally attributed not to the faulty *use* of material but to some inherent fault or lack of value in the material itself. To promote the proper use of gypsum plaster this booklet has been issued, and it is hoped that its study by contractors and their workmen, and in fact by architects and engineers as well, will be helpful in spreading knowledge of the simple principles which govern the correct use of gypsum and in thus establishing a much higher standard of plastering.

The booklet begins with listing the chief difficulties which builders encounter in using this material, after which, also in table form, are given the remedies. Take, for example, the matter of "Irregularity of Set," which generally means "Too Slow Set" or "Too Quick Set." The remedies for both these difficulties are given in tabulated form, and so on with many other troubles, the remedies for which are quite simple but not sufficiently well known.

As one looks over this helpful little booklet it will be seen that it covers, in small compass, the knowledge which a competent plaster worker should possess. It is no more difficult to turn out an excellent piece of plastering than a piece which is full of faults from beginning to end, and which may have to be pulled down and done over again. It is not always due to the workman's indifference; quite as often in these days of careless building and slipshod methods the trouble is caused by the man's not having had proper training under foremen or other workmen who are themselves well trained. Nothing which could readily be had would increase a workman's efficiency (thereby adding to his interest in his work) more surely than careful study and application of the teachings of this book, and its value extends also to architects and engineers to whom good plastering is absolutely essential.

THE HOLTZER-CABOT ELECTRIC CO., Boston. "Fire Alarm Systems for Schools" (Booklet No. 16,304); "Telephone Systems for Schools" (Booklet No. 14,800); "Program Bells for Schools" (Booklet No. 15,103); "Low Tension Power Plant and Laboratory Equipment for Schools" (Booklet No. 16,500).

The practical value of an up-to-date school is dependent quite as much upon the adequacy of its equipment as upon the actual planning of the building itself. Study of the modern school's requirements has led to the supplying, in wide variety, of the many forms of this necessary equipment, and one highly important part of a school architect's service consists in selecting from this variety the exact equipment which will best supply the school's demands. Probably with a view to presenting in compact form the necessary information regarding several forms of equipment for educational buildings, this company has issued, bound together, booklets which the school architect will be glad to have in this collated form. The titles of the various brochures suggest the ground which they cover, and

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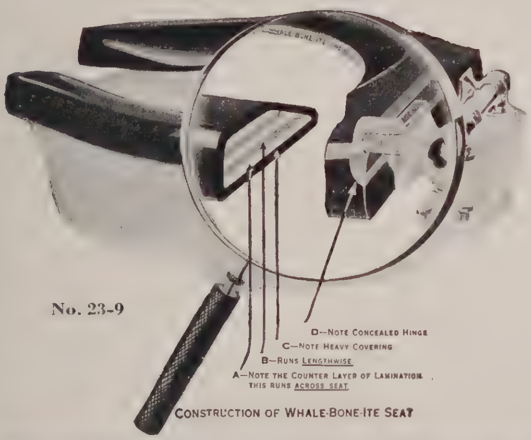
D—Note Concealed Hinge
C—Note Heavy Covering
B—Runs Lengthwise
A—Note the Counter Layer of Lamination this runs across seat

No. 23-9

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each contains full but concise data concerning what forms its subject matter. The office of even the architect most completely in touch with the newest developments in the school equipment field should possess, as part of its planning data, this practical and helpful collection of booklets on the subject.

THE AMERICAN BRASS CO., Waterbury, Conn. "Brass Pipe for Water Service."

It is a widely known fact, supported by the findings of scientific research, that the value of water pipes and the service which is had from them are dependent in no small measure upon the character of the water used. The "red plague," as waterworks engineers call rusty water, which has appeared time and again, particularly in New England, is traced invariably to the rusting of the inner surfaces of metal pipes. Piping is also often affected by the composition of the soil in which it is buried. The failure of piping results not only in costly renewals of corroded piping, the troublesome tearing up of walls, floors and pavements, but in loss of prestige by architects and contractors who have been forced by unwise owners to use unsuitable pipe in an effort to save the comparatively trivial cost of piping which would have given proper service.

In this brochure the American Brass Co. sets forth the merits of brass piping, giving also many valuable facts which architects and specification writers should bear in mind, and plans and details of properly designed installations.

ANNOUNCEMENTS

Arthur T. Remick, architect, announces the removal of his office from 52 Vanderbilt avenue to 135 East 43rd street, New York.

Theodore L. Perrier, architect, announces the removal of his office to 211 Camp street, New Orleans.

Hoit, Price & Barnes announce the removal of their offices to 800 Davidson Bldg., 17th and Main streets, Kansas City.

Frederick Meisler, architect, has opened a new office on Bergen pike, Little Ferry, N. J. Manufacturers' samples and catalogs desired.

Gerald Lynton Kaufman, architect, announces the removal of his office from 101 Park avenue to 331 Madison avenue, New York.

Leigh French, Jr., architect, has removed from 597 Fifth avenue to 17 East 49th street, New York.

Frank M. Tyler, architect, announces the removal of his office to Suite 12, Balford Bldg., 634 S. Western avenue, Los Angeles.

J. A. Lohman & Son, architects, formerly of 570 Donner avenue, Monessen, Pa., have removed their office to 114½ East Market street, Warren, Ohio. Manufacturers' samples and catalogs are requested.

M. L. Barker announces the removal of his offices to the Bogardus Bldg., 1505 North Western avenue, Los Angeles. Manufacturers' catalogs and samples requested.

James R. and Edward J. Law announce the removal of their offices to the First Central Bldg., Madison, Wis.

F. A. Hollingsworth announces the opening of offices in Suite 12, City Bldg., St. Augustine, Fla., for the general practice of architecture. Manufacturers' samples and catalogs are desired.

Joseph Van G. Hoffecker has opened an office at 803 Eighth street, Ocean City, N. J., for the general practice of architecture. Manufacturers' samples and catalogs are requested.

Carl C. Ade announces the removal of his offices from 344 East avenue to 104 East avenue, Rochester, N. Y.

Bradford Hardie, Jr., has opened an office for the practice of architecture at 648 First National Bank Bldg., El Paso, Texas. Manufacturers' catalogs and samples requested.

Edw. F. O'Brien, Jr., announces his association with the firm of David S. Castle Company, and that he will have charge of their Dallas office, Dallas County State Bank Bldg. Manufacturers' samples and catalogs desired.

William G. Perry and Shaw & Hepburn announce the formation of a partnership under the firm name of Perry, Shaw & Hepburn for the practice of architecture at 177 State street, Boston.

A. C. Zimmerman has opened offices for the practice of architecture and engineering at 417 San Fernando Bldg., Los Angeles. Manufacturers' catalogs and samples desired.

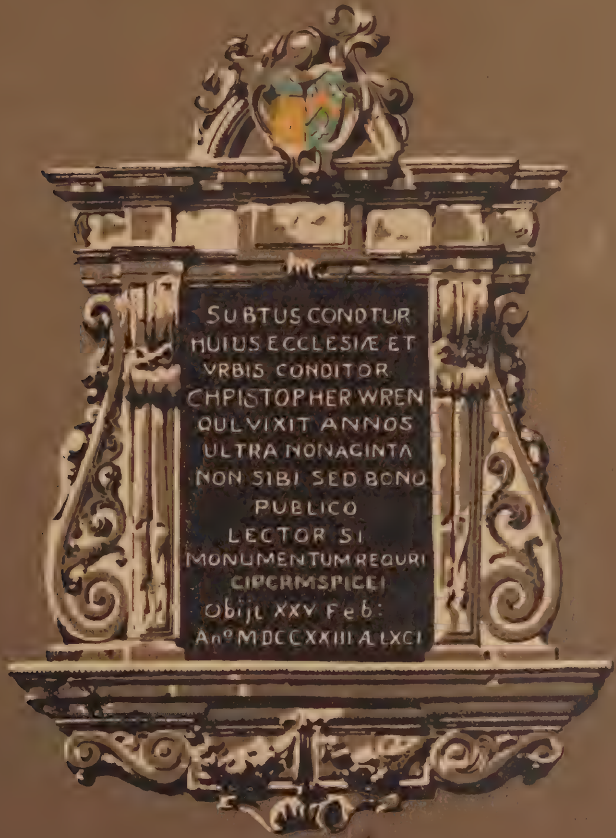
Joseph Weston announces the opening of an office for the practice of architecture at 515 Hollywood Security Bldg., Hollywood, Calif. Manufacturers' samples and catalogs requested.

Walter P. Marshall has opened an office for the practice of architecture at 1108 East Henry street, Savannah. Manufacturers' samples and catalogs requested.

Franz & Bond, architects and engineers, 189 High street, Holyoke, Mass., have dissolved partnership owing to the appointment of Philip E. Bond as city engineer. Fred H. Franz will continue the business at the same address.

John J. Donovan, school building specialist, announces that Dr. Frank W. Hart, Associate Professor of Educational Administration, and L. H. Peterson, Associate in Educational Administration, Department of Education, University of California, are now associated with him for the purpose of providing a consulting service to school boards and architects; offices at 512 Pacific Bldg., Oakland, Calif.

THE ARCHITECTURAL FORUM



MARCH 1923

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An Error of Omission

In our December 1922 advertisement showing the Allen Memorial Hospital of Waterloo, Iowa, we unintentionally omitted the name of Mr. Clinton P. Shockley of that city as Associate Architect. We are glad to extend here the credit due him.

REGISTERED NAIRN'S MADE IN U·S·A· TRADE MARK

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ENDURES the punishment of the countless feet passing to and fro in a great office. It stands up against the scrape of desk chairs and office equipment. A permanent floor at a reasonable outlay — no costly upkeep. Resilient, noiseless — easy on the feet and on the nerves.

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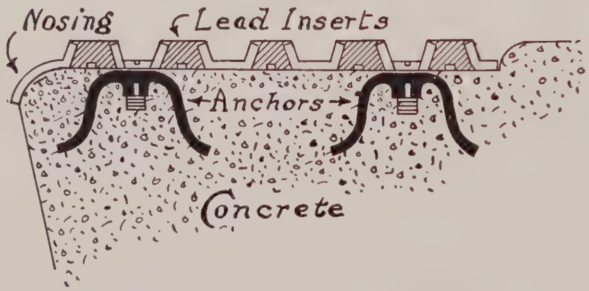

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Ten homes built in Montclair, N. J., by Upper Montclair Land Company. Kitchens floored with Armstrong's Linoleum. Cemented over felt to wood underfloors. Linoleum Contractor: Conradson & Hill, N. Y. C.

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Specifications for linoleum contained in Sweet's Architectural Catalog, Seventeenth Edition, pages 442-447

The Kitchen Floors Are Linoleum

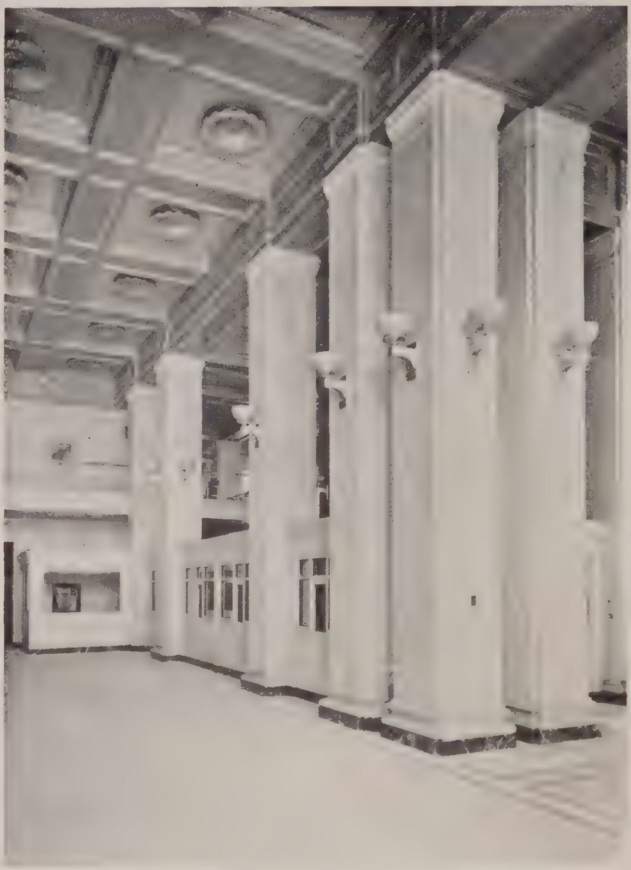
PERMANENT floors of Armstrong's Inlaid Linoleum were installed in all the kitchens of these ten residences in Montclair, N. J., when the houses were erected.

Linoleum floors were specified for the kitchens primarily because they helped to sell the houses. Here are a few reasons why the housewife likes a linoleum floor in her kitchen:

1. Its smooth, crackless surface is sanitary and easy to keep clean.
2. The pleasing designs and bright colorings in Armstrong's Linoleum make cheerful, good-looking floors.
3. Linoleum is resilient, and therefore a quiet, comfortable, non-slippery floor.

The people for whom you are planning new homes are learning about permanent floors of Armstrong's Linoleum in the pages of their magazines. You can be prepared to answer their questions by writing for samples and the 16-page illustrated portfolio, "Decorative Floors."

Armstrong Cork Co., *Linoleum Division,* **Lancaster, Pa.**



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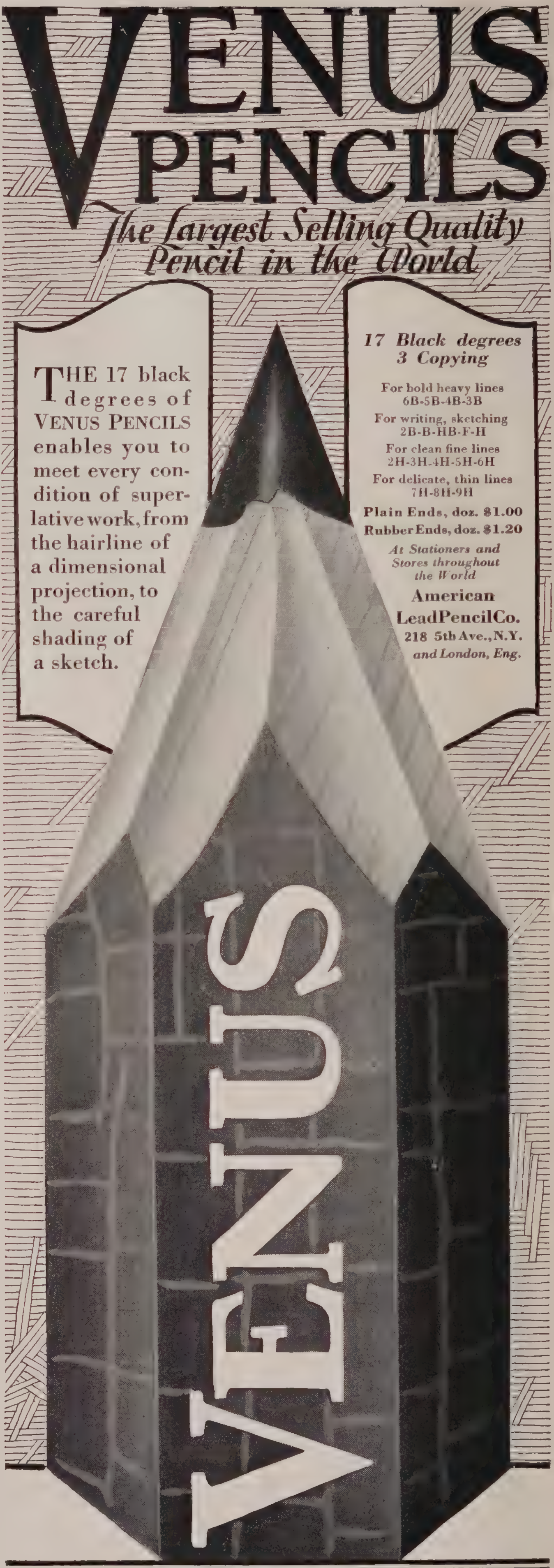
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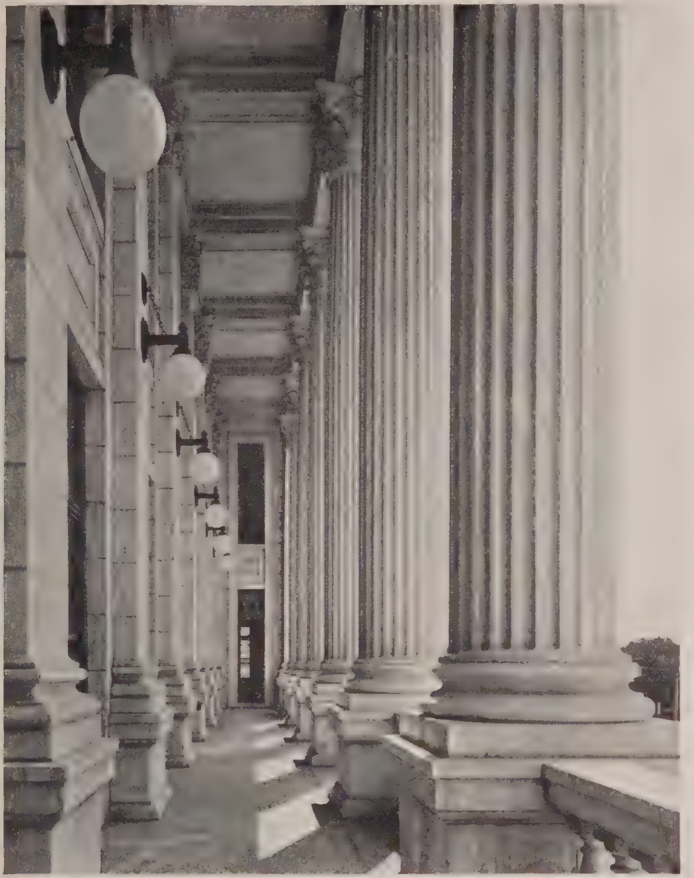

Memorial to the G. A. R. Topeka, Kansas

C. H. Chandler, Architect

Two views of a notable marble building at Topeka, Kansas, which was reared as a silent tribute to the men of the G. A. R. The upper picture has peculiar interest in that it emphasizes the unfailing adaptability of Vermont marble to column work. The illustration at the bottom of the page is an attempt to show within a small space the entire length and breadth of the structure. This is an exterior of Vermont white marble cut and finished in the Proctor shops.

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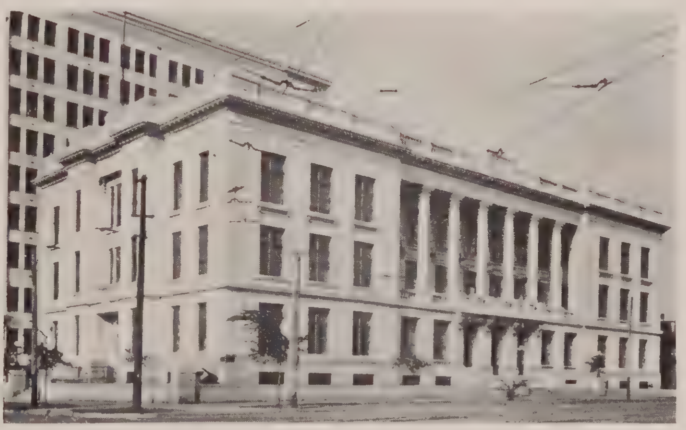

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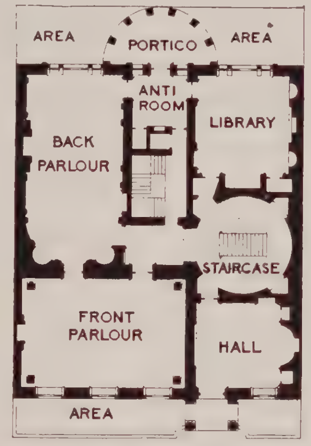
BOOK DEPARTMENT

ARCHITECTURE OF ROBERT AND JAMES ADAM, 1758-1794. By Arthur T. Bolton, F.S.A., F.R.I.B.A., Curator of the Sir John Soane Museum. 2 Volumes, 10½ x 15¼ ins. Containing 800 pages and about 700 superb illustrations, plans and drawings. Price $60. Charles Scribner's Sons, Fifth Avenue, New York.

IF the early decades of the twentieth century have produced but little in the way of design to add to the record of architecture's achievements, they have at least contributed much to the general fund of architectural knowledge by the publication of many works, the result of study and research, which examine more or less critically the work of past ages and of individual men, rescue much valuable matter from oblivion, and place the results of this study in such form that the record is preserved and passed along to future generations. Much effort has been devoted to studying and recording the architecture of Greece and Rome; the Gothic centuries have received the study of master writers, architects and historians; the renaissance in every country of Europe fills countless volumes by learned and critical authors, and the student who in ages to come undertakes the study of these great architectural epochs will have cause to thank the architects of the present age and perhaps will forgive what some critics of architecture consider poverty of resource in not inventing a new architectural and decorative style.



Entrance Floor of Home House

Home House, 20 Portman Square
Robert Adam, Architect, 1775
Illustration from "The Architecture of Robert and James Adam"

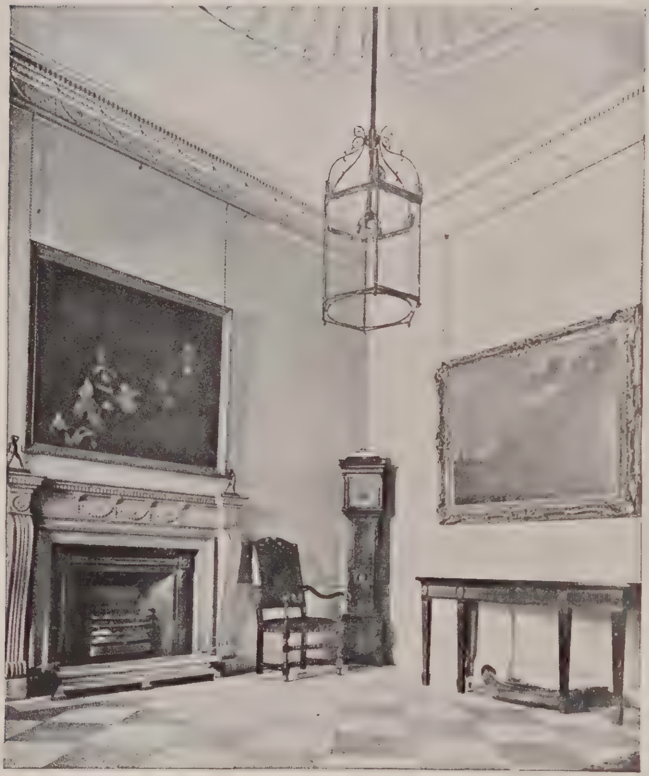
This excellent record of the manner of building which is known by the name of Robert and James Adam has been prepared under unusual circumstances and based upon data far different from that which forms the foundation of most works on architectural subjects. Sir John Soane (1753–1837) came to London the year which saw the beginning of the Adelphi; later he purchased from the heirs of the Adam family 53 volumes of original drawings and sketches, the work of the Adam brothers themselves, and this valuable collection is now one of the treasures of the Soane Museum. The present volumes, prepared by the curator of the museum, are based upon these original works and may be said to continue and supplement the illustration of their work begun by the Adam brothers themselves.

Time has spared a large proportion of the work of Robert and James Adam; with a large amount of original data as a beginning, supplemented by the resources of modern photography, it has been possible to present in these volumes a work which seems destined to remain the last word upon the architectural work of these two Scotchmen with whose achievements the long and glorious course of the English renaissance came to an end. Much of their residence work is still in the hands of descendants of the clients for whom it was originally built, and these descendants have co-operated with the present author in making this a work of a truly monumental nature.

Only a few of the great English architects have left work of a kind which affords much in the way of actual help or guidance to present-day architects. The era of building great town palaces and country houses which began during the final years of the Stuart period and lasted through the reigns of the earlier Georges long since came to an end in England, while in all America there could scarcely be found a bare half-dozen homes which would even approximate in size, scale and splendor any one of scores of houses built during the period all over England from the channel to the Tweed. The work of the Adam brothers, upon the contrary, abounds in examples of what might be called lesser magnificence, and which therefore holds forth much of promise for use at the present day. In country houses this work includes much that is homelike and livable, characterized by merely the slight touch of formality which may be regarded as architectural good manners, while in city work, particularly that where many houses are designed as groups—in places, crescents or circles—there is found much which is quite as helpful during the early decades of the twentieth century as during the the eighteenth.

A great part of the interest which inheres in the work of Robert and James Adam is the result of the close agreement between their interior architecture and the furnishings and fittings which set it forth. It probably did not occur to them to adopt the practice of so many

The Architecture *of* Robert & James Adam



A Complete Survey of Adam Work

FEW of the English periods are as rich as the late 18th century in residence work which lends itself to present-day adaptation. Among the houses designed by the Adam brothers are many in town or country with the restrained, balanced exteriors and the dignified interiors which clients demand today. With this distinctive architecture went accessories and furniture in complete accord. This valuable work contains illustrations and floor plans of a vast number of Adam buildings, together with illustrations of their furnishings and fittings. By far the most complete, authoritative and helpful book on the Adam period.

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later architects and devote their care and consummate skill to planning the interior of a house or to designing the trim and decorations of walls and ceilings only to turn it over to another hand for its furnishing upon which the harmony and unity of the entire work would depend,—and still more remote from their thoughts, we may believe, would it have been to leave their clients to their own devices in work so important. Perhaps these gifted architects made a practice of so ordering the expenditure of clients' appropriations that sufficient funds were left for adequate furnishing, and with the instinct of true artists they busied themselves with accessories as well as with structure—with furniture, silver and linen no less than with mantels of marble or stone or chandeliers of bronze or cut crystal, and the result is unity and expression in the highest degree.

The suitability of much of the original Adam work for use today makes particularly valuable the inclusion of plans of a large proportion of the buildings shown. These plans give an excellent idea of the interiors of houses which were often stately in effect without being of great size or magnificence, and many of the plans would be entirely appropriate for use today. The work is of great value to any architect whose practice includes residence work of large or of medium size.

PLANS AND ILLUSTRATIONS OF PRISONS AND REFORMATORIES. Collected by Hastings H. Hart, LLD., President of the American Prison Association, and presented at the fifty-second congress of the Association, Detroit, October, 1922. Published by the Russell Sage Foundation, New York.

CHANGE in public attitude toward no problem of modern life is more marked than that which during the past one or two decades has been wrought in the public's altered position toward public institutions in general, and more especially toward institutions of a penal or correctional nature. One need not go far into the past to find instances of abuse and maltreatment of unfortunate inmates almost beyond belief; today, in fact, criticism is sometimes justly directed toward certain of these institutions, but the criticism is so comparatively rare that it makes even more evident the fact that the majority of places for public correction are conducted upon a plane unknown a decade or two ago.

The old fashioned theory, of course, was that a prisoner had sunk so low in the social scale that he no longer possessed rights to be respected by the more fortunate. With this belief as a foundation it was not surprising that jails became veritable houses of torture and schools of crime; youthful offenders were herded with hardened and confirmed criminals, so that generally the prisoner left the institution worse than when he went in. The newer position is that a jail should exert an influence which is helpful and constructive as well as correctional, and working upon this theory public sentiment has compelled the adoption of new and improved methods of treatment which quite naturally have found expression in the structures built to house these institutions. The Russell Sage Foundation, active already in countless good causes, issues this volume to present a survey of progress in this direction, that by affording a review of what has been done aid may be given to communities elsewhere as the erection of new jails or reformatories offers opportunity for further raising of the general standard.

After an introduction by Dr. Hart, whose work in the improvement of prisons is well known, study is made of a

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SLATE has been the preferred roofing for many centuries. No man-made roofing has ever equaled slate in efficiency, stability, permanence and economy.

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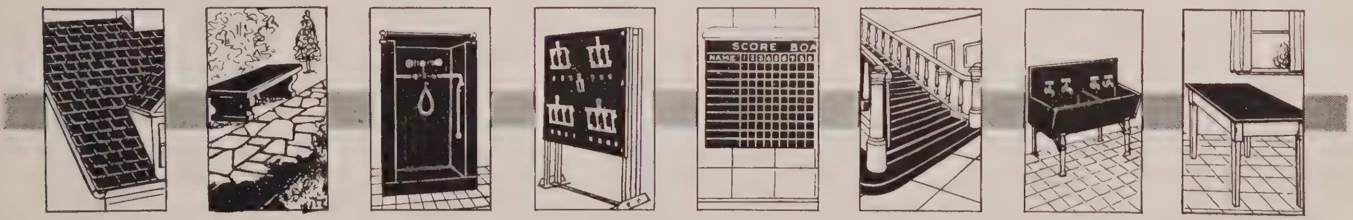

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THE INDUSTRIAL ARTS. *By Huger Elliott.*
MUSIC. *By Thomas Whitney Surette.*

THE Committee on Education of the A. I. A. has produced this volume for use as a textbook in American colleges, and for general reading and study by the public, with the purpose of arousing interest in the fine arts and creating a better understanding and appreciation of them. The book is intended specifically to appeal to those who have heretofore taken but little interest in the arts, and have had no realization of the fact that the fine arts are for them and that these arts are already inseparably connected with their everyday lives.

Each of the chapters has been prepared by a recognized authority on the subject. Written for the laity, the work is free from technical matter and is notable for the clarity of its language and absence of complicated theoretical discussion. It presents in simple form the vital principles of design and construction which not only govern good architecture, but should also influence the character of all other arts and every manufactured product and material thing that human hands can make.

483 pp., 5¾ x 8½ ins. Fully illustrated, bound in cloth

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number of institutions, and illustrations and plans of their buildings are given. Among them are the new psychiatric building of the Sing Sing Prison, the Thorn Hill School for Delinquent Boys, the Detroit House of Correction, and the Westchester County Penitentiary and Workhouse at White Plains, N. Y., all models of what structures of their kinds should be, and affording suggestions to architects who will be called upon to design and plan such institutions no less than to those whose duty it is to conduct them.

HERALDRY AND FLORAL FORMS AS USED IN DECORATION. By Herbert Cole, with drawings by the Author. 243 pp., 7½ x 9¾ ins. Price $4. E. P. Dutton & Co., New York.

DESIGNERS in many branches of architectural and decorative work have frequent occasion to draw upon the vast resources supplied by heraldry. The word itself suggests mediæval romance, and like the sound of a trumpet calls up visions of the pageantry of war or the pomp and circumstance of royal courts and their blaze of color on shields, banners and other panoply of the middle ages. Even today when its antiquarian significance is largely overlooked or ignored, if not actually discredited, heraldry still possesses immense decorative and architectural interest, and, as already suggested, it enters into almost everything with which many designers have to do.

Probably to few of these designers does heraldry hold much more than a superficial interest, but if it is to be used intelligently it is necessary to have some small knowledge of the subject, and the function of this work is to give some examples of heraldic decoration which shall be interesting and useful to the decorator, and to supplement them with diagrams and certain data on the subject which will aid students in understanding the general principles governing use of heraldic design.

Heraldry is generally regarded as a "Gothic art," meaning that its best period was that during which Gothic architectural forms were used throughout western Europe. The period of the renaissance brought little which tended to the advancement of heraldry, and generally speaking a decline set in at just the time when renaissance forms and influence came into vogue.

Since the subject enters so largely into use in connection with work in stained glass, wood carving, textile weaving and decoration of many kinds it is important that correct heraldic drawing be understood, for there is a surprise in store for those who suppose that such drawing is easy of accomplishment. The seemingly childlike simplicity and naïveté with which conventionalized birds and beasts fill the shields of old heraldic devices, instead of being acquired all at once, were really the result of long practice and much training, and are not to be acquired quickly as many modern students of design realize to their sorrow.

Many students of design think that the use of decorative forms both heraldic and floral such as are discussed in this work achieved its highest success in England and France, and, therefore, England and France supply the larger part of the subject matter. Every source of information and design has been drawn upon—the stained and painted glass of old buildings ecclesiastical and otherwise, wood carving from many sources, leadwork, plaster, textiles and tapestries have been made to yield their treasures to add to the helpfulness of what is an important volume for the decorator and the designer.

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THE SIGNIFICANCE OF THE FINE ARTS. Published under the Direction of the Committee on Education, American Institute of Architects. 483 pp., 5¾ x 8½ ins. Fully illustrated and bound in cloth. Price $3.50. Marshall Jones Company, Boston.

WITH the aim of stimulating public interest in the various arts the A. I. A. formed some time ago a committee to conduct on behalf of the institute a campaign which it is hoped will raise the standards of American taste by deepening the understanding and therefore the appreciation of the arts themselves and the relation of the people to them. To dwell upon the nature of the arts and their practical application to life may seem to many trite and unnecessary, yet the fact remains that to a vast body of Americans art is something remote, mysterious and esoteric, enshrined in museums and to be approached if at all only with reverence and awe; it is not apparent that art is something which in one form or another an individual meets at almost every turn, that it is a part of life itself, and that it belongs to everyone as much as the natural right to air or sunshine.

As part of the activities of this committee comes the publication of an admirable volume of essays covering the different departments of art, the work being intended for use as a textbook in schools and colleges as well as for general instruction. While the authors of the different chapters are men eminent in their respective spheres the style in which the volume is written is simplicity itself, and the subjects are treated in what might be described as a "popular" manner calculated to rob the subject matter of much of its terror. After an introduction by George C. Nimmons, Classical Architecture is discussed by C. Howard Walker; Architecture of the Middle Ages, by Ralph Adams Cram; the Renaissance, by H. Van Buren Magonigle; Modern Architecture, by Paul P. Cret; Sculpture, by Lorado Taft; Painting, by Bryson Burroughs; Landscape Design, by F. L. Olmsted; City Planning, by E. H. Bennett; Industrial Arts, by Huger Elliott; Music, by Thomas Whitney Surette, while the presentation is summed up Mr. Walker.

YEAR BOOK OF THE THUMB TACK CLUB, Detroit, 1922. 199 pp., 9 x 11 ins. Price $1.25. C. Wm. Palmer, 404 Moffat Bldg., Detroit.

WITH Detroit known as a city in which good taste is well developed it might be expected that its architectural organizations would be governed by an excellent standard in the matter of design. It is with confidence, therefore, that one takes up the year book of the Thumb Tack Club which is also the catalog of its second annual architectural exhibition, held during November, 1922, at the Detroit Institute of Arts.

The exhibition was largely made up of photographs and drawings of work either completed or contemplated, and of buildings of different kinds; public and commercial structures, residences, churches and other buildings of an ecclesiastical or semi-ecclesiastical nature, and miscellaneous structures, were carefully chosen and well presented. Work shown was not confined to that from the offices of Detroit architects, for one finds much from offices in New York, Boston, Philadelphia, St. Louis and other cities, to be expected in an exhibition which while held under the auspices of a local organization was really national in scope. Along with illustrations of what is strictly architectural work the exhibition contained much relating to the different liberal arts which contribute so greatly to the development of architecture.

THE DAVANZATI PALACE, FLORENCE

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VOLUME XXXVIII NUMBER 3

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ALBERT J. MacDONALD, Editor

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THE EDITOR'S FORUM

A JOURNAL FOR ILLINOIS CHAPTER

THE Illinois Chapter of the American Institute of Architects began with the new year the publication of *The Leaflet*, a little journal to record its activities and spread its influence. With much of interest to chronicle, and as the organ of a particularly live chapter of the Institute, *The Leaflet* should grow and expand, as doubtless it will.

It is always a pleasure for the older architectural publications to welcome to the fold another journal to aid in widening the influence of architecture.

CLUB SCHOLARSHIPS

THE higher training of architects is a matter which may well concern the members of architectural societies, and it is interesting to note the activities of the Architectural Club of New Haven in establishing a scholarship at the Yale School of Architecture. The club has also undertaken the founding of a scholarship in architecture at the Fontainebleau School of Fine Arts, the establishment of which was noted upon this page in THE FORUM for February. It is intended that both scholarships be awarded after competitions open to architectural students and younger architects living in Connecticut.

WREN COMMEMORATIONS

IN both England and America the closing days of February were marked by commemorations of the death of England's greatest architect—Sir Christopher Wren. Countless tributes from many sources have recounted his achievements and triumphs, and on February 25, the two-hundredth anniversary of his demise, the commemoration reached a fitting conclusion when beneath the dome of St. Paul's—at once his supreme creation and his tomb—there assembled a representation of the architects of the world, under the auspices of the Royal Institute of British Architects, to pay honor to his memory. Among the many wreaths laid upon the simple marble slab which marks his grave was one from the Architectural League of New York, placed there by the American ambassador. At the same time this commemoration was taking place in London, Howard Greenley, as president of the Architectural League, placed a wreath upon the portrait of Sir Christopher which hung in the league's annual exhibition in New York.

It has been pleasant to note that in all the forms which notice of this anniversary has taken emphasis has been laid upon the unity of purpose which guides architecture in Great Britain and America, architectural problems in both countries covering much the same general scope.

MAKING USE OF PERIODICALS

IN a recent issue of *Engineering News-Record* a suggestion is made on "Getting the Full Value of Engineering Periodicals" which might be applied to journals of other than engineering scope. It is doubtful if the readers of a technical publication of any kind secure anything like its full value during the life of a "current number," and the appearance of another issue only too often relegates the preceding number to the limbo of obsolete things. Even when the various issues are carefully preserved and filed, and even though they are well indexed when a volume has been completed, the indices are not often consulted, and the valuable contents of the various numbers is likely to become buried treasure.

This suggests our pointing out the care and thought with which THE ARCHITECTURAL FORUM is planned with a view to its being of lasting value. For convenience in filing the various articles are printed upon both sides of a sheet or upon both sides of several sheets—always in such form that by filing the sheets concerned the complete article in question *and nothing else* is preserved. Equal care is given to the compiling of the classified index which is published every six months, at the end of a volume, in addition to the "contents" page of each issue; buildings which have been published are classified as to building types, architectural styles, etc., and a cross index is made under names of architects, everything being done, in fact, which care and experience can suggest as likely to aid THE FORUM's readers and to be of help to those who keep their volumes intact instead of filing under different headings articles selected for preservation.

Probably but few of those who read a magazine, examine the illustrations and give even casual attention to the advertising section have more than a hazy idea of the care and effort which have entered into the magazine's making to give it the character which it must have to render it of value to its readers and therefore worth preserving.

NEW PATTERNS FOR MOULDINGS

THE Southern Pine Association publishes in book form the standard patterns for mouldings designed by a committee representing the American Institute of Architects and the National Lumber Manufacturers' Association. In this book, which has been prepared for distribution to wholesale and retail dealers, architects and others connected with the lumber and building trades, the new patterns are shown at full size, and subscriber mills of the association are prepared to supply the mouldings. These moulding patterns have been pronounced architecturally correct by the architects upon the committee.

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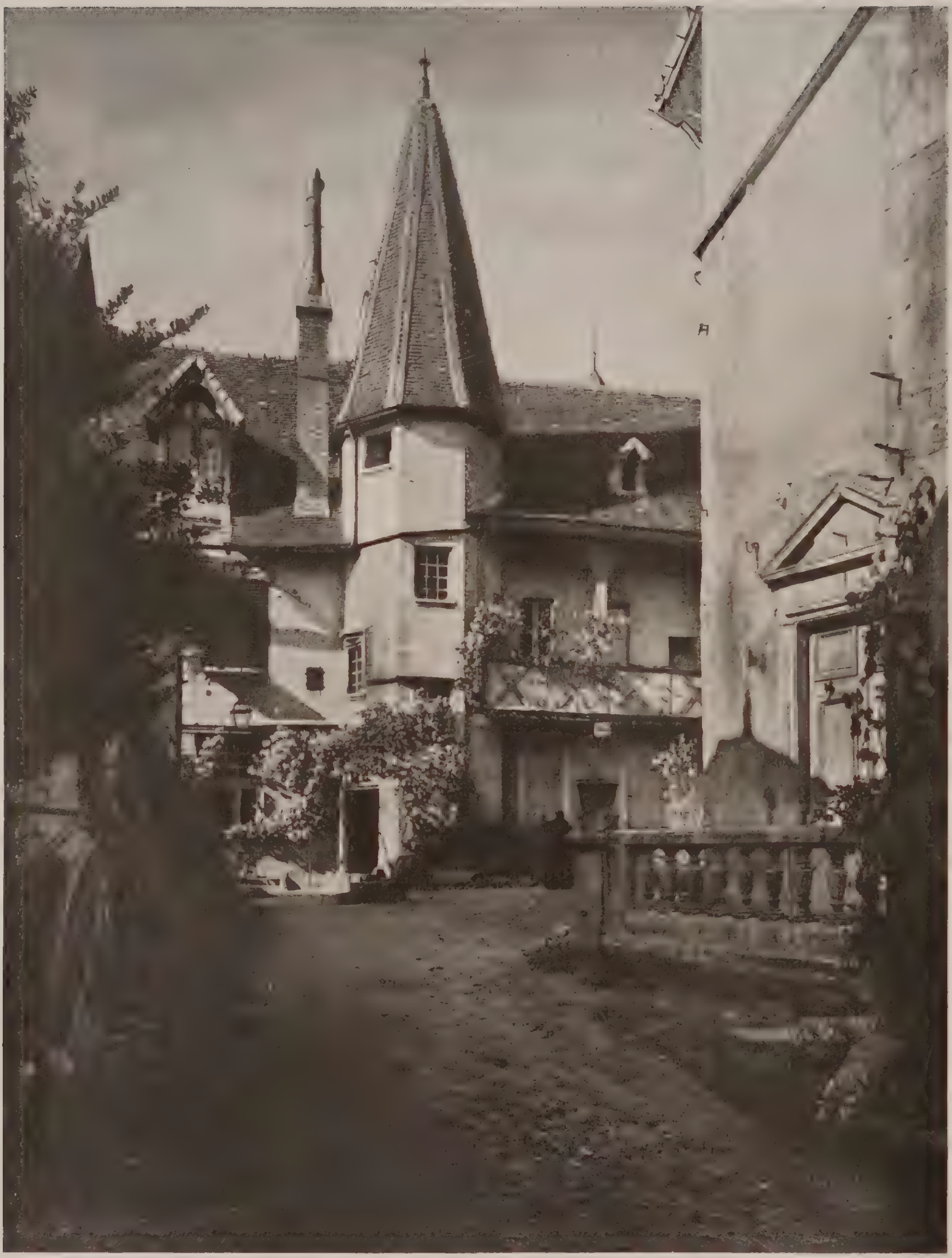


PALAIS DES DUCS
THE "FRENCH HOME" FOR AMERICAN SOLDIERS IN 1919
BEAUNE, FRANCE

FROM PHOTOGRAPH BY G. DOLBY

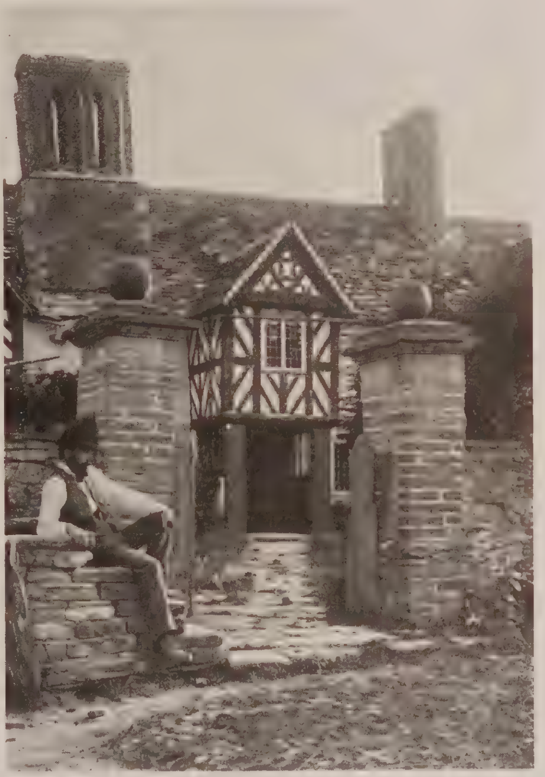
The
ARCHITECTURAL
FORUM

VOLUME XXXVIII MARCH 1923 NUMBER 3

Modern American Country Houses

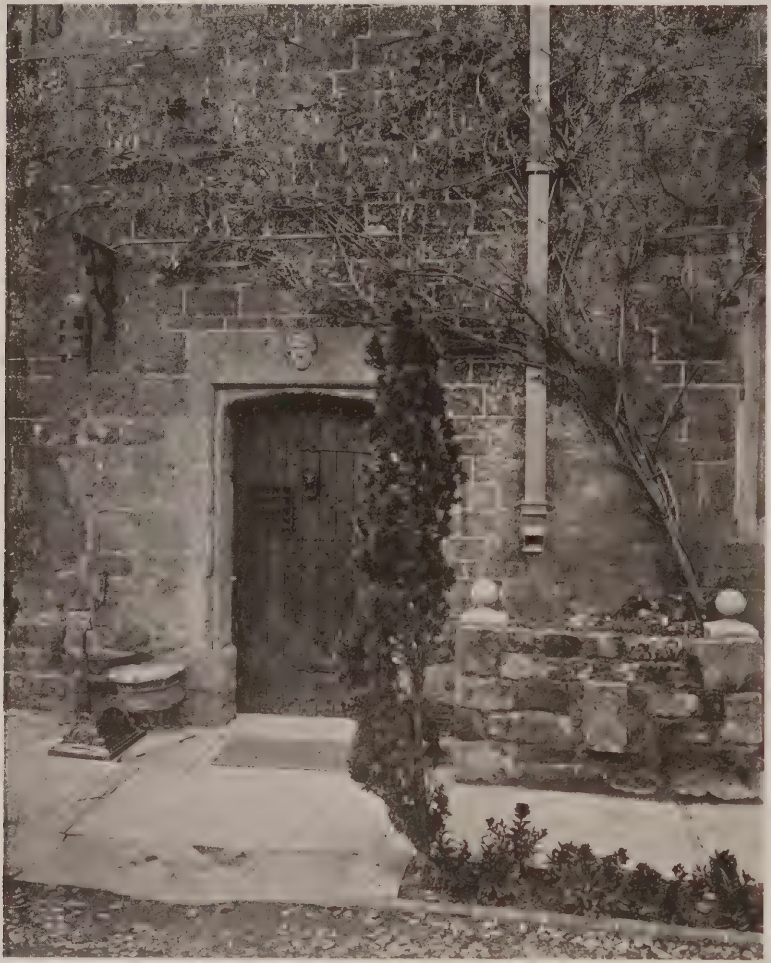
By AYMAR EMBURY II, A.I.A.

THE subject of American domestic architecture is one which has been so fully and completely discussed during the past 10 years that there seems to be little one can add to it. The past year has seen no outstanding achievements, nor indeed has any year of the past 15 or 20, but rather there has been steady and continuous progress both toward better knowledge of traditional styles, and a more sympathetic adaptation of their elements to modern uses, and a tendency, perhaps unconscious, to fuse traditional motifs into what promises to be the beginnings of a national school. Ten years ago there was a very sharp distinction between the houses derived from the various historical styles, and one was able to sort magazine illustrations according to their precedents without much question as to the drawer in which they should be placed. Today this is not quite the case, and very often one finds it difficult or impossible to determine whether a house is preponderantly English Georgian or American colonial in its motifs, or which of two such diverse elements as the Spanish or the English cottage is dominant.



Detail from Old English Country House in Hertfordshire
Illustrating combination of varied materials

The ability manifest in many American offices to so blend and combine apparently irreconcilable historic elements has been due more to a very thorough knowledge of the elements themselves than to any other fact. The architect of 25 or 30 years ago who attempted at all to reproduce European motifs apparently felt it necessary to examine the sources to discover whether among his collection of precedents he could find any that he desired to use; yet with all this checking up of documents, there were few American architects who had a genuine knowledge of the fundamentals of the styles which they endeavored to use. But though these men had for the most part been foreign trained and in addition to their training had traveled extensively in Europe, these things were not sufficient to account either for their superiority to other architects, or for the failure of the profession as a whole to comprehend the essentials of the styles they endeavored to use. It was not necessary to study colonial architecture in Europe, nor was it difficult to travel about sufficiently to understand the essentials of colonial architecture, and yet it was only when Frank Wallis began to study the remaining buildings that it was realized that colonial work consisted of anything more than white columns (preferably two stories high) and green blinds. The epoch of the measured drawing had not yet begun. Further, it has been understood only within the past few years that the color and the texture of the surface of the building have anything to do with its verisimilitude. There was a time when, following the late R. M. Hunt, a considerable number of houses were erected both in the country and in the city purporting to be French chateaux; for the most part these old buildings are today regarded as absolutely without interest, mainly because the designers used materials which were



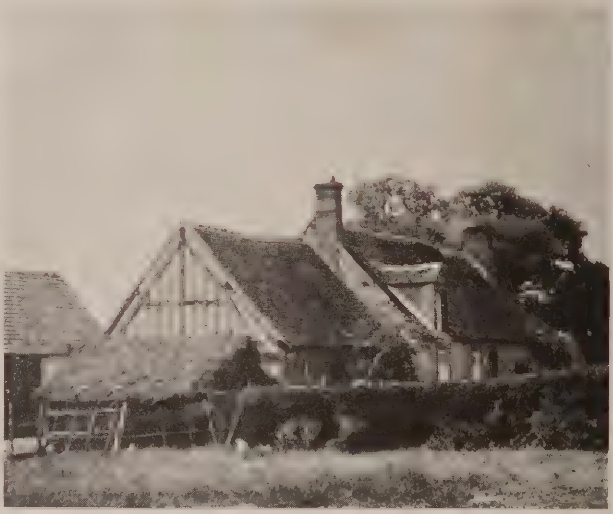
Detail of Stone Walls of English Cotswold House
Ilmington Manor, Near Shipston-on-Stowe

hard, wiry and unpleasant, and in spite of the fact that in many cases the masses of the buildings were well proportioned and the detail was admirably modeled and executed.

The main difference between the architect of current work and the architect of 20 years ago is that books are no longer regarded as the last word. Many of our men are so thoroughly acquainted with the essentials of historic styles that they are able to work without documents, and although perhaps not with the literal accuracy in detail displayed by the older men, with an infinitely greater fidelity in spirit. Even in so difficult and so little understood a field as the Gothic, Charles Klauder and Bertram Goodhue have executed a number of buildings which, were they antiquities, would have drawn the tourist and the architect alike to study them. Yet it will be found upon close examination of most of their work that exact adherence to tradition is the exception and not the rule, and that while their work is solidly based on the finest of Gothic precedent and is itself genuinely Gothic, it is still unlike any remaining examples of the historic styles.

A not dissimilar process has gone on in our country work. Following the lead of Frank E. Wallis, Frank Chouteau Brown, Joseph Everett Chandler and other close students of colonial work, and perhaps largely due to the splendid publication of many measured drawings of colonial work in "The Georgian Period," the architect began to see colonial without his spectacles, and new vision of the style was the result.

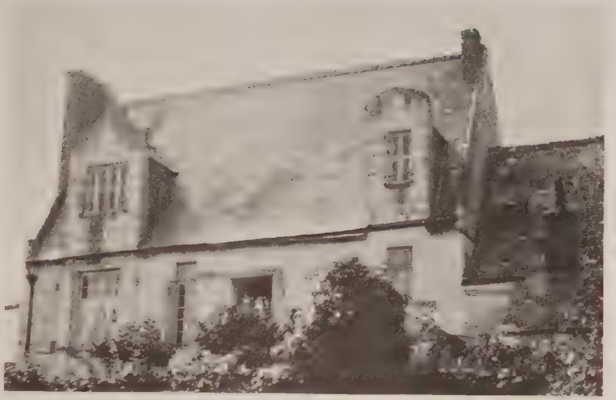
Prior to 1900 there was but one outstanding example of the "colonial" country house executed in modern times—the Breese house at Southampton, by McKim, Mead & White, but since that time what a number there have been, and by how considerable a number of architects! Peabody, Wilson & Brown, H. T. Lindeberg, Electus D. Litchfield, Wesley Sherwood Bessell and Dwight James Baum of New York; Derby & Robinson, Kilham, Hopkins & Greeley, Richard Arnold Fisher and Parker, Thomas & Rice of Boston; Charles Barton Keene, Duhring, Okie & Ziegler, Zantzinger, Borie & Medary and Mellor, Meigs & Howe of Philadelphia; Meade & Hamilton of Cleveland; Hentz, Reid & Adler of Atlanta; the late Mr. Waggaman of Washington, and Adler & Dangler of Chicago, to mention only a few that come to mind, have all been doing country houses which may be roughly classed as "colonial" and which, given a proper setting and age, would have the same quality which endears to us the true colonial, in addition to an architectural interest not commonly found in real colonial work. This is true of almost literal transcriptions of old work, as well as of houses in which the detail is strongly Italian and in which the proportions of the



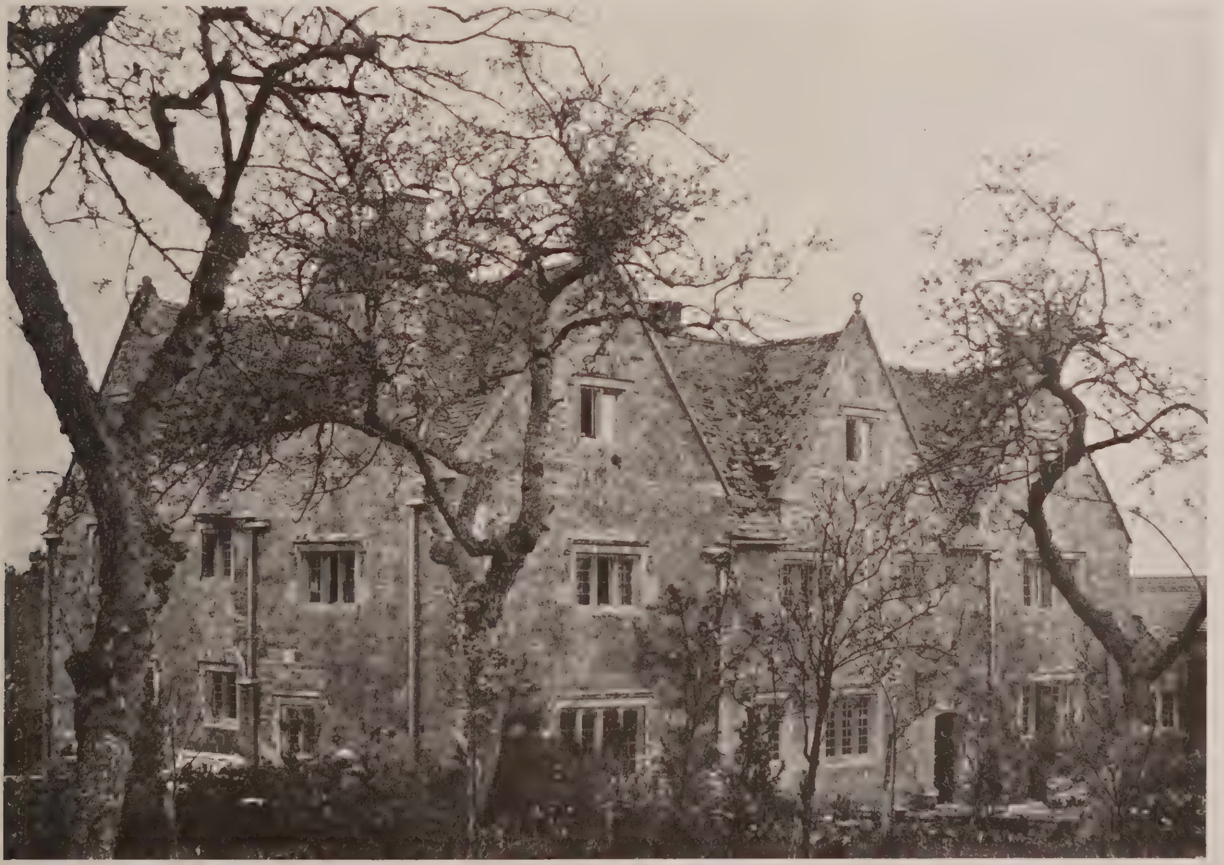
Old French Farmhouse at Anjou
Showing small scaled tile roofs, stucco and half-timber walls

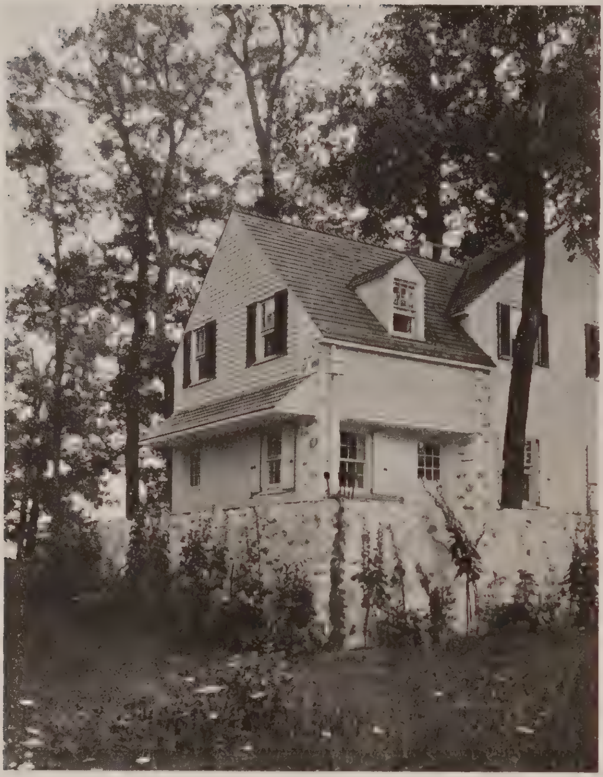
window openings and the mass are quite distinctly Georgian, for our architects have been quick to borrow from other architectural tongues to enrich the meager vocabulary of our native art. In some cases the translation has been very free; kinship between the work of Samuel McIntyre and that of the Adams is close, although the American architect and wood worker had by no means the knowledge of precedent and the fertility of invention of the English brothers. Therefore, in enlarging the scope of colonial work by the motifs generally known as "Adam" the difference is hardly perceived, and its effect upon the delicate and refined architecture of the late colonial period has been rather an enlargement of its scope than a change in its character. This refers of course especially to the modern work derived from the graceful and attenuated late New England style; the burlier style of the southern states is more easily influenced by the English Georgian or by the neo-classic Italian.

Naturally enough, many of our architects have turned directly to the English Georgian for precedent instead of passing through the transitional stages between colonial and Georgian and, on the whole, a remarkable fidelity to the spirit of the best Georgian traditions has been preserved. Delano & Aldrich, Charles Platt and John Russell Pope of New York, Hugh Garden and Howard Shaw in Chicago, have worked with remarkable success in the Georgian school, very frequently combining pure Georgian motifs with the cognate Italian, and of the recent American work much of the most genuinely successful has been derived. English methods of life and conditions of climate very much resemble our own, so that is unnecessary to twist or distort the historic motifs to new forms, and since the historic style was of straightforward, constructive character and of materials available to us, our Georgian work has been entirely successful.


Old French Farmhouse in Lorraine
With cut stone walls and slate roof finished with tile ridge and gable copings

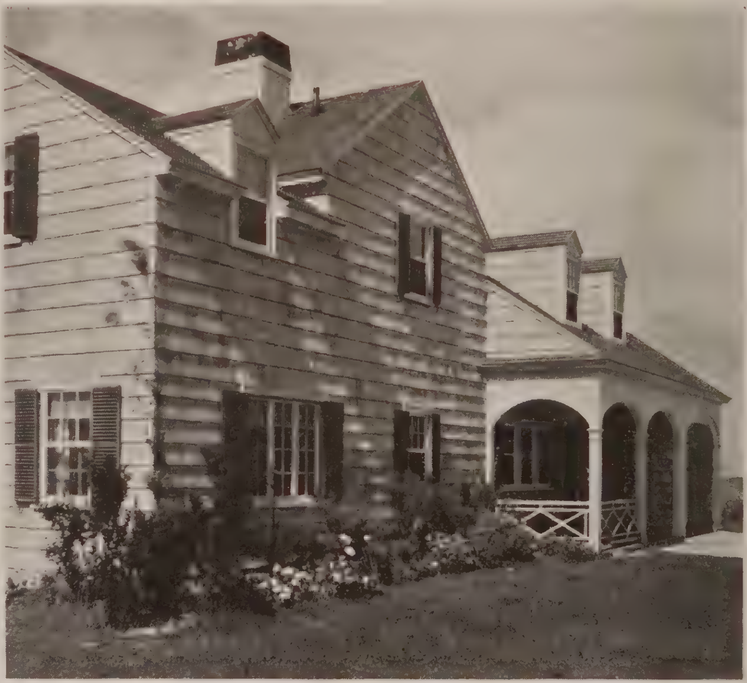
The same cannot be said of American work following the English cottage precedent or, as it is


Typical Stone House from the Cotswold District of England
Ilmington Manor, Near Shipston-on-Stowe



White Painted Clapboard and Rubble Stone House at Paoli, Pa.
R. Brognard Okie, Architect

often called, the "Elizabethan." Of the many houses of this type that have attracted great attention upon their first publication few have been the source of continuous pleasure as have those of the classic tradition. It is obvious that half-timber work is a sham. That its use is justifiable because of its decorative qualities is perhaps true, but the steady growth of attention to texture and surface of half-timber work has indicated that there has been something wrong with it in most cases where it has been used. If the pattern of brown woodwork and white or buff stucco were a thing in itself worth the trouble of attaining, it would not seem necessary to imitate so carefully the texture of old woodwork and old plastering, even to the studied irregularity in the spacing and dimensions of the timbers, which alone appears to be the way in which half-timber is passably successful. Yet the half-timber work of England, France and southern Germany has been a veritable lodestone to the architect, and there are few among us who have not tried, not once but often, to include it in country house design—and it must be regretfully admitted in most cases, with results which are unsatisfactory, and rarely, if ever, entirely and permanently charming. Half-timber work is so essentially a structural matter that to use it as a surface covering appears to be almost impossible, and even in the few cases where in modern work it is used structurally, as it was in the old times, it still leaves something to be desired. It may be argued that practically all decorative architectural motifs have been at some time in the past derived from structure, and that for this reason the use of the structural half-timber as a decorative motif is entirely proper, yet the average half-timber house, or even the average of the best half-timber houses, is not so good as the average of the other forms used in our modern country houses, and although in photographs half-timber is usually better than in reality, even photographs of it become tiresome when looked at often, a thing distinctly not true of the more simply designed building. Houses of the English cottage style in other materials seem to offer a greater opportunity for successful use, and many of our most charming small country houses have included in them as an integral part of their design motifs adapted from the sixteenth and seventeenth century English and Norman work. The grouped and mullioned windows with steel sash and leaded glass which have recently been made available by several manufacturers have helped to attain this end, and a correct use of the wall materials has contributed to the success of the style. It was for a long time thought possible to build the walls of a country house of rock faced or even boulder stone, a material entirely out of scale to the size of the building, as well as foreign to the refinement of our modern habits of life. Stucco, which some years ago was made mechanically as perfect as the plasterers could be induced to do, is now left with a soft tex-

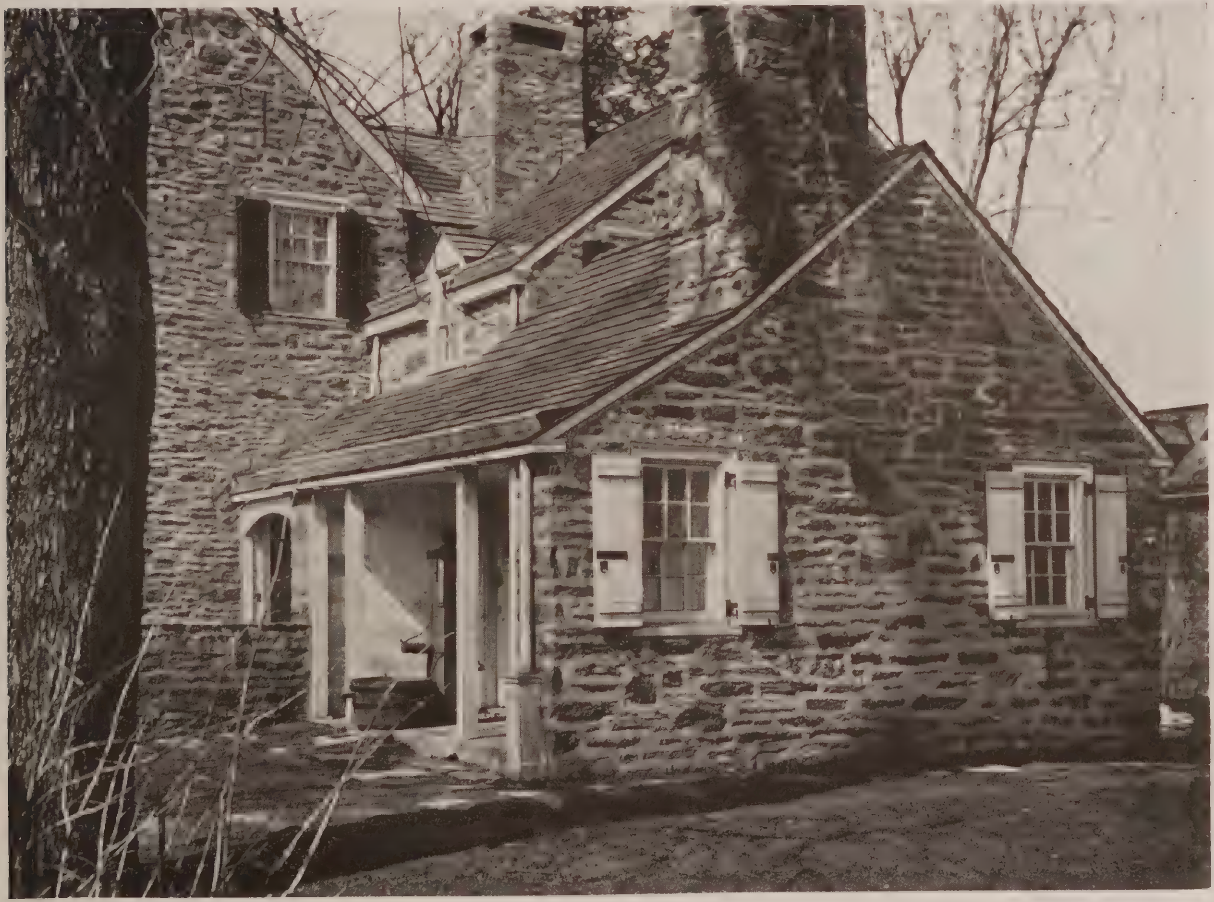


Stained Shingles and Simple Wood Trim after Cape Cod Models
Edward Sears Read, Architect

tured natural surface, and stone walls are built of small, dressed stone; cast iron brickwork has been pretty well forgotten; the elements of construction as well as of detail are known and respected.

The architect of imagination who has not permitted his fancy to become cramped by the desire for symmetry of the classical school can today build houses which possess much if not all of the charm of the unaffected and naive traditional English cottage. It is a style which has very distinct limits, because the low and broken roof lines which appear to be essential to a picturesque structure do not afford sufficient bedroom space for the American family. If we slept five or six in a room on the ground floor, in the way the Norman peasants are used to doing, and if the attics were used as granaries, it seems likely that our American adaptations of the cottage style would equal, perhaps surpass, those of Europe; but when everybody wants a bedroom of his own and a bath besides, and when these rooms must be well lighted, the area of the bedrooms must usually exceed that of the living rooms, and the architect must exert his ingenuity rather than his imagination in increasing the sleeping accommodations on the second floor, a thing in itself destructive of the picturesque and often wholly impossible.

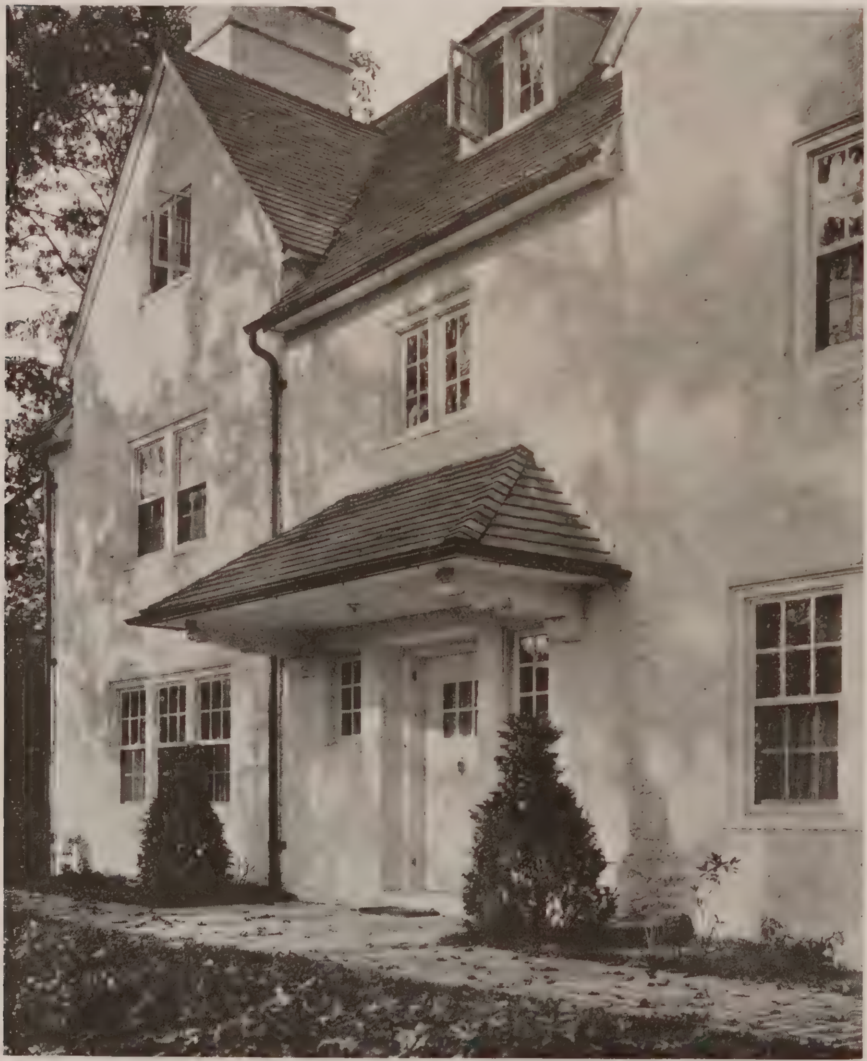
Perhaps the most interesting group of work which has been illustrated during the past year has been that from California, following a mixture of Italian and Spanish precedents. Our "Italian" houses have for the most part been derived from the larger villas or the palaces of Italy, but recently there has been an enormously increased appreciation of the value of the picturesque Italian work which has for so many years (perhaps ever since Roman times) existed concurrently with the more formal architecture of the Italian cities and great houses. It appears to have been the case in all of Europe that the great historic styles which we know so well and have studied so carefully have been for the most part the expression of the cultured few, tinctured with the flavor of the countries in which they were used, but after all touching the mass of the people only lightly. So we find, concurrent with the great houses and public buildings of the Gothic, renaissance and modern periods, in every country a single and undisturbed humble, national style. While in Italy the style of the cultivated was the renaissance, in England the Georgian, in France the renaissance of the Henris and Louis, in each of these countries, side by side with this sophisticated architecture and uninfluenced by it, there existed and continues to exist a strong, unchanging and racial type of building,—the poor man's house and the poor man's shop,



Detail from House of I. Wistar Morris, Esq., Chestnut Hill, Pa.
Pennsylvania ledge stone with flush cement mortar pointing
R. Brognard Okie, Architect

built by people and for people who knew nothing of books and cared little for styles, built by masons and carpenters who knew nothing of the schools, and hardly knew their own ignorance. In England this produced the cottage type, of which so much has here been written. In France there was no country style common to the whole country, but north of the Loire the work resembles rather the English, while south of the Loire in the mountain villages of the Cevennes, such as, for example, Albi, there long existed and still persists a type of building in all respects comparable with the country architecture of Italy. The Italian country style has only recently been recognized as having any interest at all, yet the picturesque appearance of Italy is due as much to the graceful and easy stucco and tile farm houses as it is to the churches and the renaissance town halls. The origin of the style is unknown. It is very likely that precisely similar dwellings were the farm groups of the Roman nobles, and it is not impossible that many of the country cottages still standing were wholly or in part built in Roman times. So by the hands of the Italian peasant, who built not for architectural effect but to afford housing for himself and his family, there were constructed a very great number of little houses and aggregations of houses of an architecture unaffected, unstudied, fluid and graceful. The work of the eastern states within the past two years has shown obvious appreciation of the value of this countrified Italian, but it has remained for California to group and combine these, with reminiscences of the Spanish mission, into a style lovely, easy and perfectly adapted to the climate and conditions of California.

The great value and beauty of this new California work has been instantly recognized by almost all of our magazines, so that even to the eastern architect, the names of George Washington Smith, Reginald Johnson and Myron Hunt are as familiar through their recent work as that of Bertram Goodhue who also may be considered as of the California school. While Californians have for a good while talked about the beauty of their houses, it seems probable that for the most part they have been deceived by the foliage and surroundings into thinking that the houses themselves were of real interest. Certainly the illustrations of Californian work which have reached the east have with few exceptions not led us to believe that the architecture of the past 20 years was comparable with that in the east. For the most part, houses were built of the frailest possible materials in the lightest fashion—and looked it. A certain number of interesting experiments in adapting the Spanish mission style in modern house work were attempted, and a certain number of imitations of colonial and English houses were constructed to meet the ideas of easterners who had moved to California or of Californians who desired what they had liked in the eastern states. Large houses were not very common nor of extraordinary quality,—most architects will remember the remarkable mediæval castle built for Mrs. Phoebe Hearst,—but of late a very considerable number of houses comparable with the biggest in the east have been constructed, and of these a very large proportion have been designed in the newer

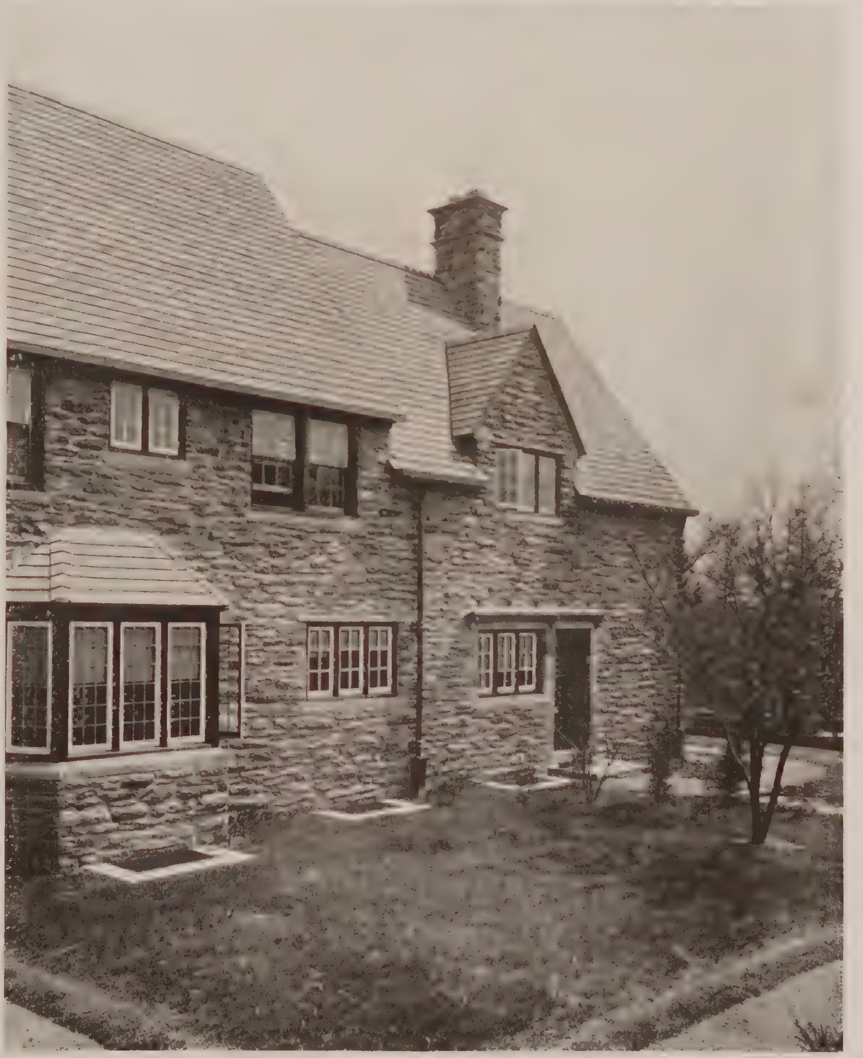


Detail, House of Burton Etherington, Esq., Germantown, Pa.
Carl A. Ziegler, Architect
Rough stone walls with joints filled with cement mortar; texture secured by smearing wall with mortar and covering with two coats of whitewash

manner, and have been very well done indeed.

California may be said to have "found itself" architecturally, a thing not yet true of the east. Of course it is impossible to say whether the current development in California is a fashion or an architectural style; it is to be hoped the latter, since climatic conditions, local materials and historic tradition alike point to the development of a school of architecture of southern characteristics. California, indeed the whole southwest, requires heavy overhanging eaves as a protection against the sun; thick walls as insulation against the heat; comparatively small window areas because of the intense brightness of the air, and low pitched roofs are rendered appropriate by the absence of snow. These requirements are identical with those which built up the Italian and Spanish country schools of architecture, and even had there been nothing to copy it would seem natural for such buildings to have been developed in the southwest, so that in principle the Italian type of building, which is generally out of place in the eastern and northern states, is eminently fitted for the southwest. Had the style been autochthonous the treatment of the detail might have evolved in a different manner, but that the rich, almost voluptuous baroque ornament of Spain and Italy in the seventeenth and eighteenth centuries is peculiarly adapted to stucco cannot well be denied, and the architects who have borrowed so freely from Italy and Spain have learned to use their material fluently and without effort, much as we here in the east have at last mastered the technique of the Georgian. A not dissimilar type of architecture has become the convention in Florida, and Addison Mizner at Palm Beach has used it quite as well as have the Californians. It is really a relief to find that the American country house of Italian or Spanish precedent can have a graceful, domestic and habitable character instead of the cold formality of the *pallazzo*, which our architects have long taught us was all that could be learned from the Italian.

As has been indicated, the constantly deepening conviction among architects that color and texture are of almost as great importance as pure design has been nearly as powerful a factor in the attainment of a genuinely fine art as has the improvement in pure design, and here it may be not unfitting to speak a word of thanks to the manufacturers who have been so willing to produce new materials as they were desired, and who have in many cases studied the old materials, discovered their advantages, and have led the architects rather than have been led by them. In the early part of the nineteenth century there was no brick to be bought which was not porous. For many years brick houses were considered damp, a thing which tended to keep up the use of wood. Then, when impervious brick came to be made, the architects found that water still leaked through the joints, and in consequence for many years our brick buildings were constructed of brick with surfaces so smooth they almost shone, laid up with the narrowest of flush joints so that the brick walls looked like red paper ruled with white lines. As a revulsion from this came the exaggerated roughness of the textured brick, and our buildings looked as if their brickwork had been laid with an



Detail of House at Oak Lane, Pa.
Carl A. Ziegler, Architect
Walls of Philadelphia ledge stone ranging in color from soft gray to warm brown. The shallow drip stones over windows, each quarried in one piece, provide an interesting note

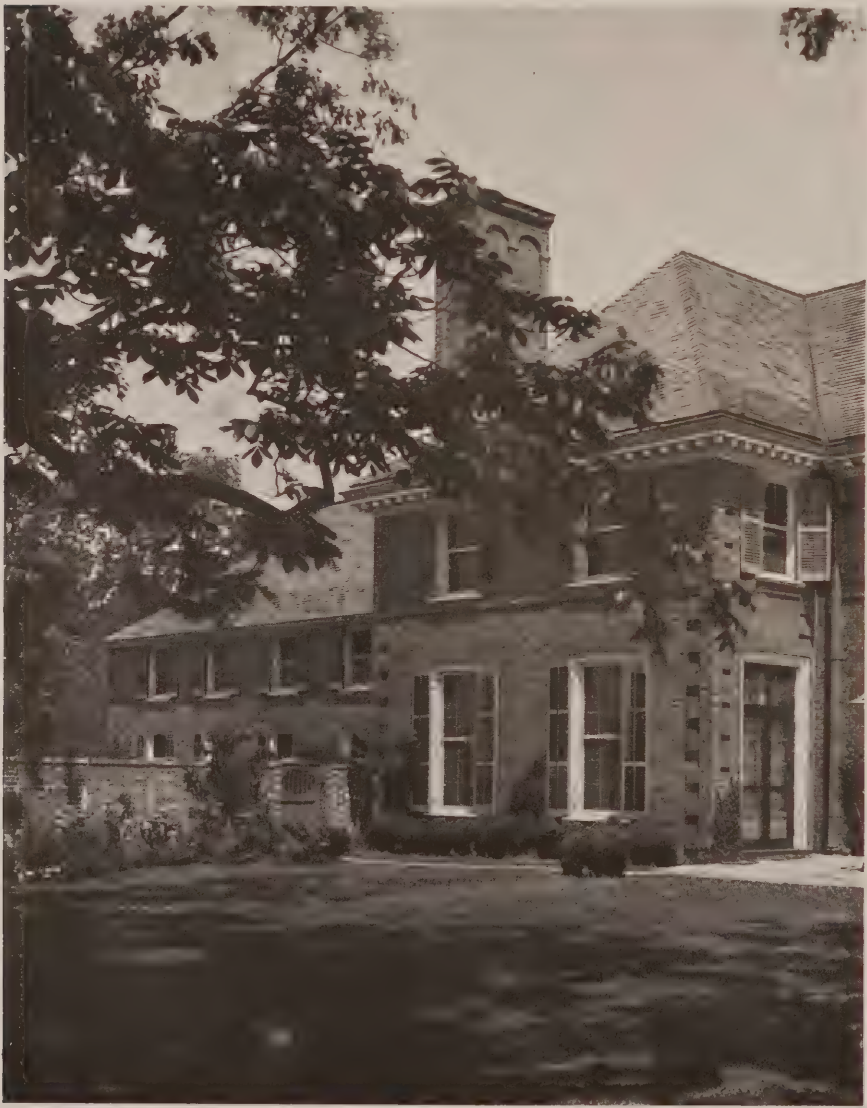
axe rather than a trowel. Today, with waterproofing and terra cotta backing, we have found we can use any sort of brick we want; texture has become as natural a consideration as proportion.

In stucco surfaces a somewhat parallel development has gone on, and the great cement manufacturers have taken a leading part in the manufacture of cement which would give the color effects the architect desires, and in developing by experiment surfaces which would have a picturesque quality not necessarily inherent in the material. Much missionary work has been done by them, and the beautifully illustrated catalogs which they have circulated throughout the United States have unquestionably done much good in reviving interest in surface texture, although they have occasionally done serious harm by inducing some unintelligent architect to choose materials absolutely unfitted for the designs to which they were applied.

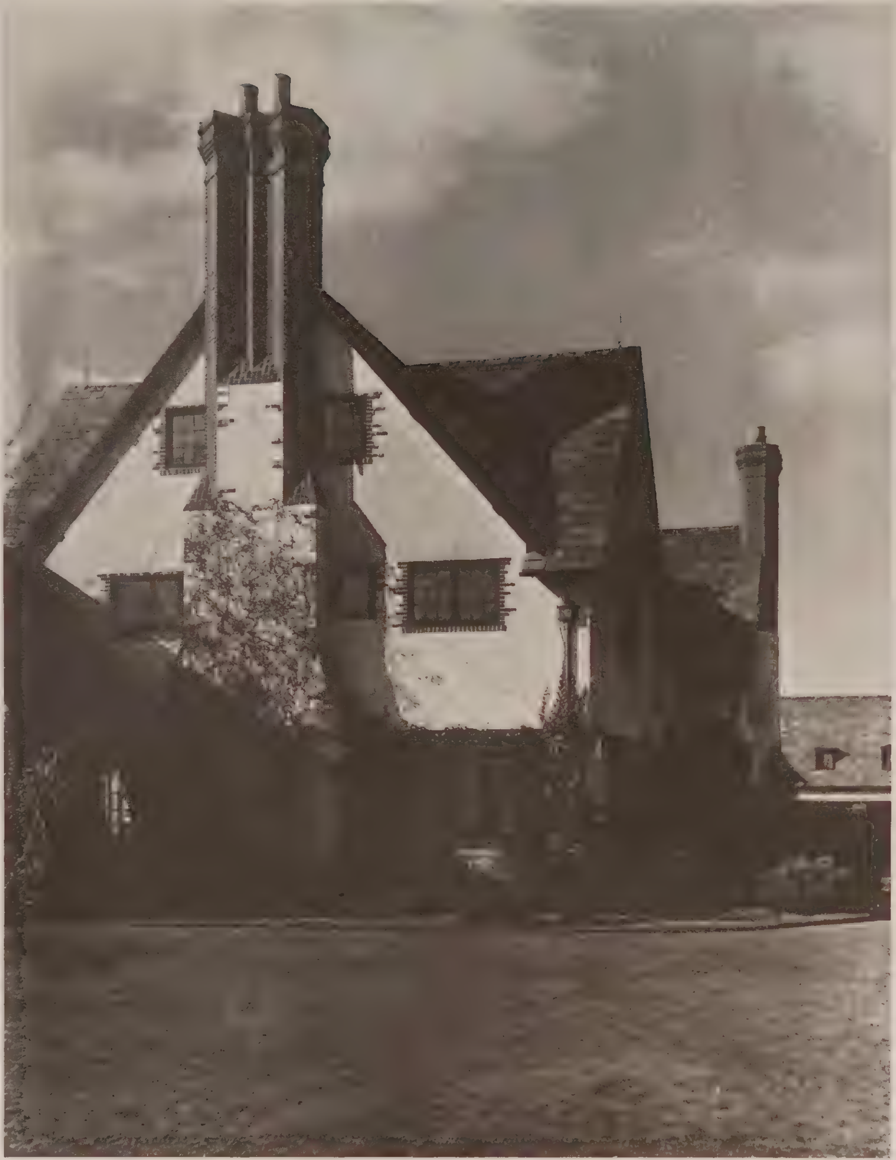
In the field of roofing a somewhat similar thing has occurred. Led by the architects a number of slate manufacturers have developed the possibilities of slate roofing almost to the limit, and even manufacturers of shingles have tried to find new and interesting ways in which shingles can be laid. Tile roofing, however, which has so many interesting possibilities, has never been properly developed, due probably to the fact that competition is not so keen in this field and consequently lends no spur to the ingenuity of the manufacturers.

Another factor in the development of our knowledge has been the constant importation of antique works of art from Europe which have given our craftsmen visual demonstration of the qualities the architects desire. Too often the architect, realizing that the European work had a more interesting surface or a charm which could not be obtained by our home industries, has endeavored to explain what he wanted, only to find that he himself did not know. The enormous number of antiques which have been brought to this country since the war has materially assisted us in valuing color and texture, since examples of almost every sort are at hand, and probably there has never existed a body of mechanics more skillful or more intelligent than those we have today.

It appears to be quite the fashion to slight our mechanics, to say that the union stultifies the craftsman, and that the good old days of honest work are past. This is not true; we have here in our great centers artificers of metal, carvers of stone, modelers, workers in plaster, cabinet makers, painters, who surpass in skill and knowledge those of any era of the past; there is literally nothing they cannot do, and when the wise architect does not attempt to direct them too far, but leaves to them the details of the process, and even the details of design, giving them only a general idea of what he wants, its position, scale and setting, he will get that inimitable personal touch in the decorating of his buildings which we have long been accustomed to sigh over as a lost art. The unions have many defects and many bad mechanics—many loafers and many parasites—but they are far from stifling the ability of the mechanic, which at last has come to be regarded as necessary to good design as the skill of the designer. We



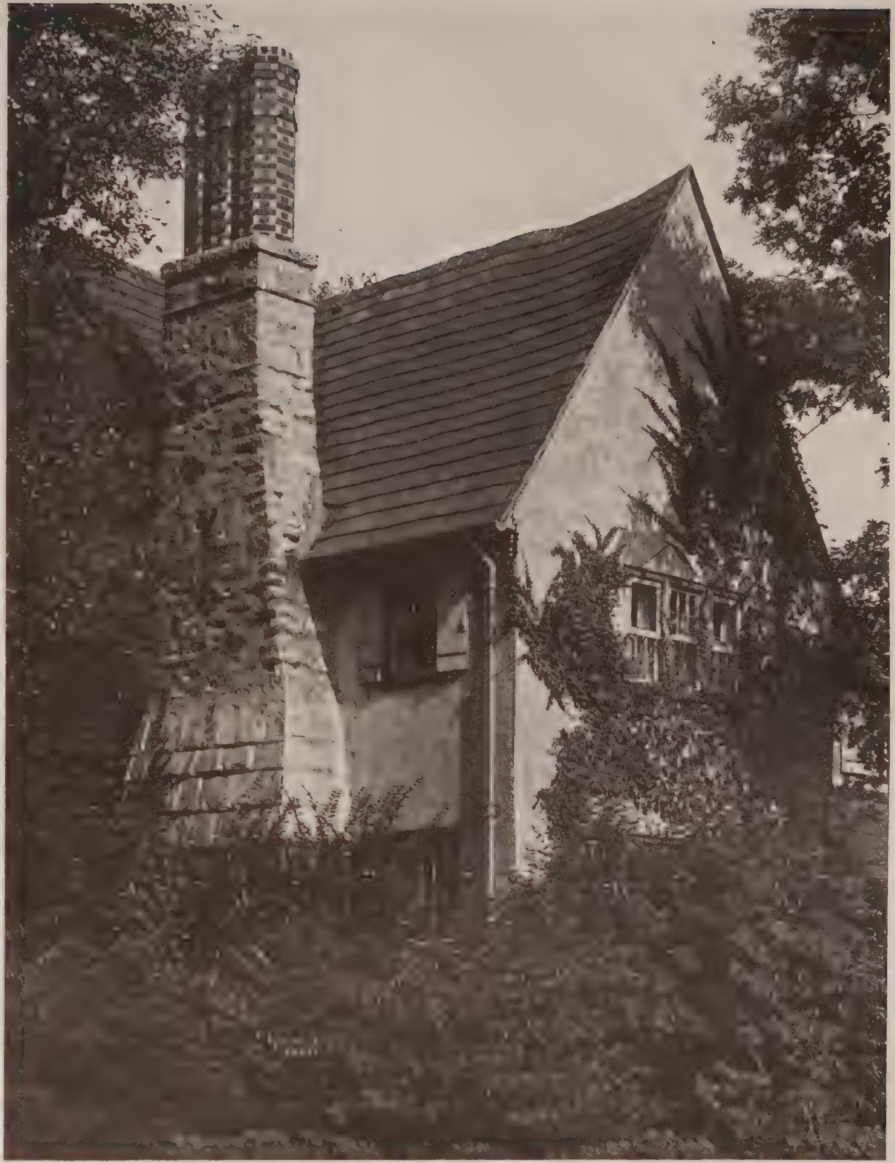
Red Brick in House of Early Georgian Character
Peabody, Wilson & Brown, Architects



STUCCO WALLS WITH TEXTURED SLATE ROOF AND VIGOROUS CHIMNEYS

HOUSE AT LOCUST VALLEY, N. Y.

GOODWIN, BULLARD & WOOLSEY, ARCHITECTS



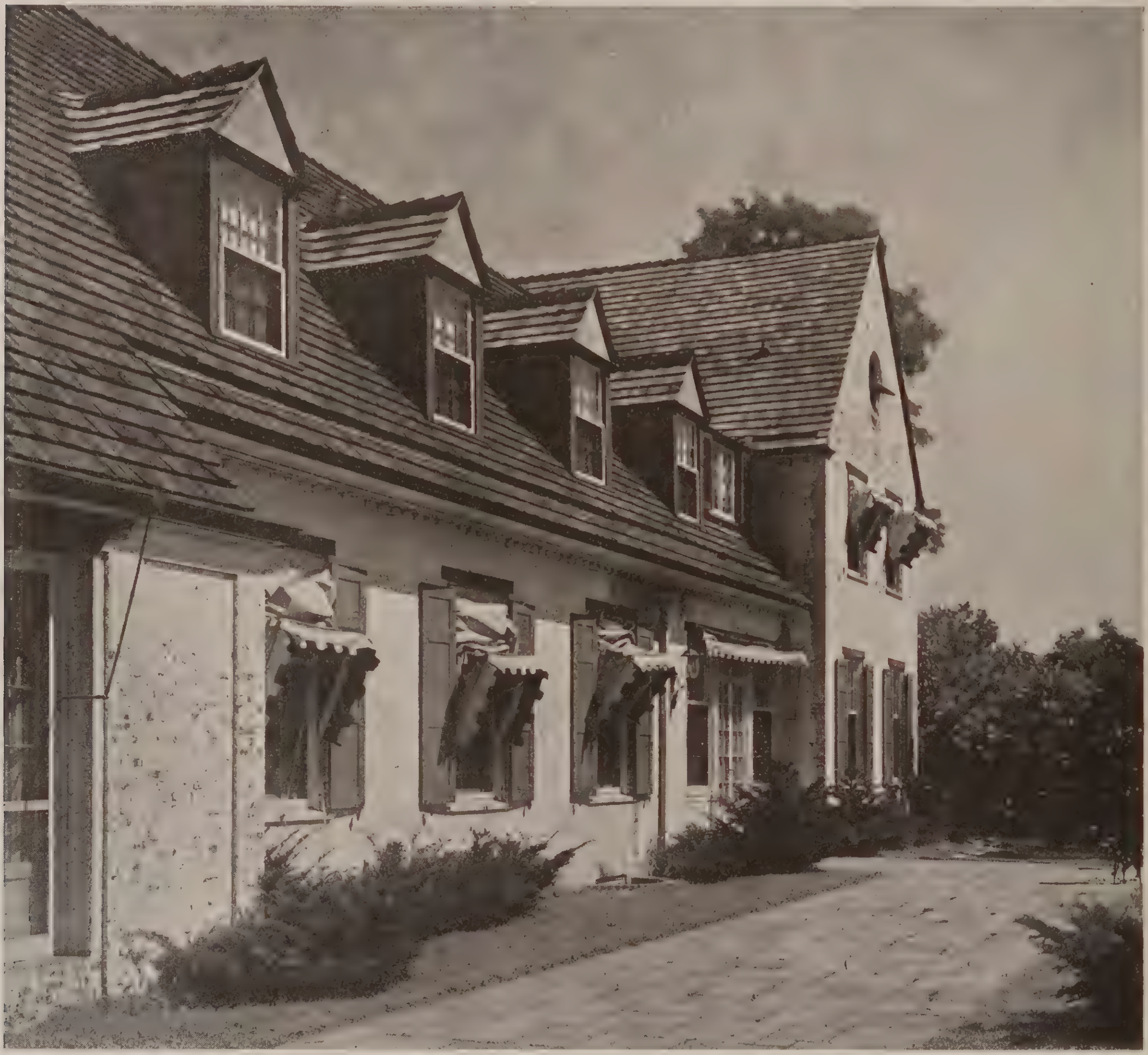
TROWELED STUCCO WALLS AND VARIED MATERIALS IN CHIMNEY

HOUSE OF GEORGE TAYLOR, ESQ., MT. VERNON, N. Y.

LEWIS BOWMAN, ARCHITECT

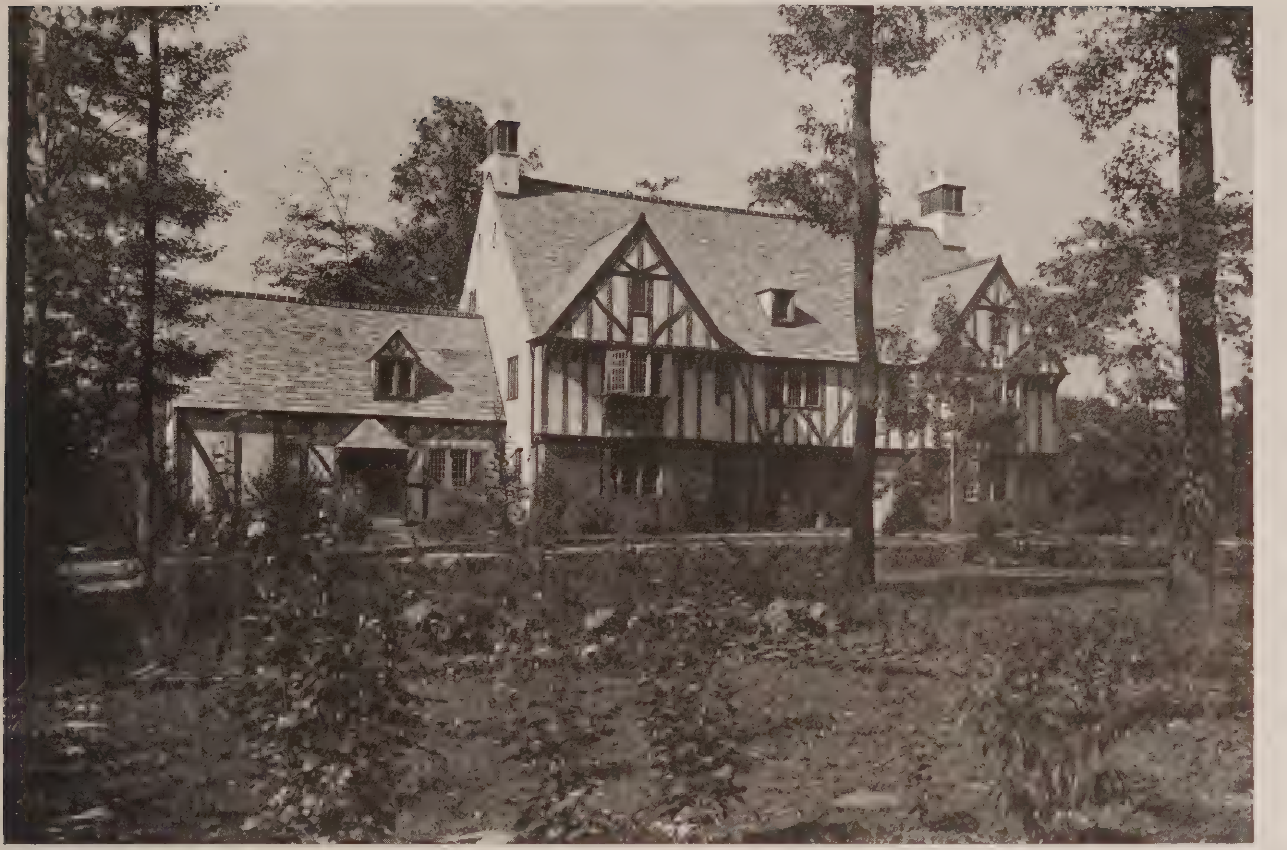
can talk about texture and color and personality, but without sympathetic and wise craftsmen we cannot get it; and the fact that nothing is easier to obtain is sufficient proof of the high quality of our mechanics in all fields.

It may be that our architects of 20 years ago, 40 years ago, or 60 years ago felt as we do, that at least they knew enough to begin to do good work; occasionally some of them did. Whether we are right in so thinking, and the American architect of country houses now knows enough to design and erect buildings which in days to come will be the object lessons to our successors that the Georgian work of England is to us, is another question. Certainly the country house problem, of all problems faced by the architect, is a thing in many ways the most difficult. Certainly in no other field does the client feel himself so competent to insist upon acceptance of his views. Certainly in no other field is the architect obliged to procure so much for so little, and in no other is there so great a possibility for imagination as opposed to knowledge. On the whole, we are doing pretty well; not well enough to be satisfied, but well enough to keep us from discouragement. Homer Saint-Gaudens writes from Europe that he has gone all about looking for examples of art and material for exhibition in the Carnegie Museum in Pittsburgh, and believes that in many ways our art leads the world, concluding, "and the biggest lead we have in the whole thing is in our architecture."

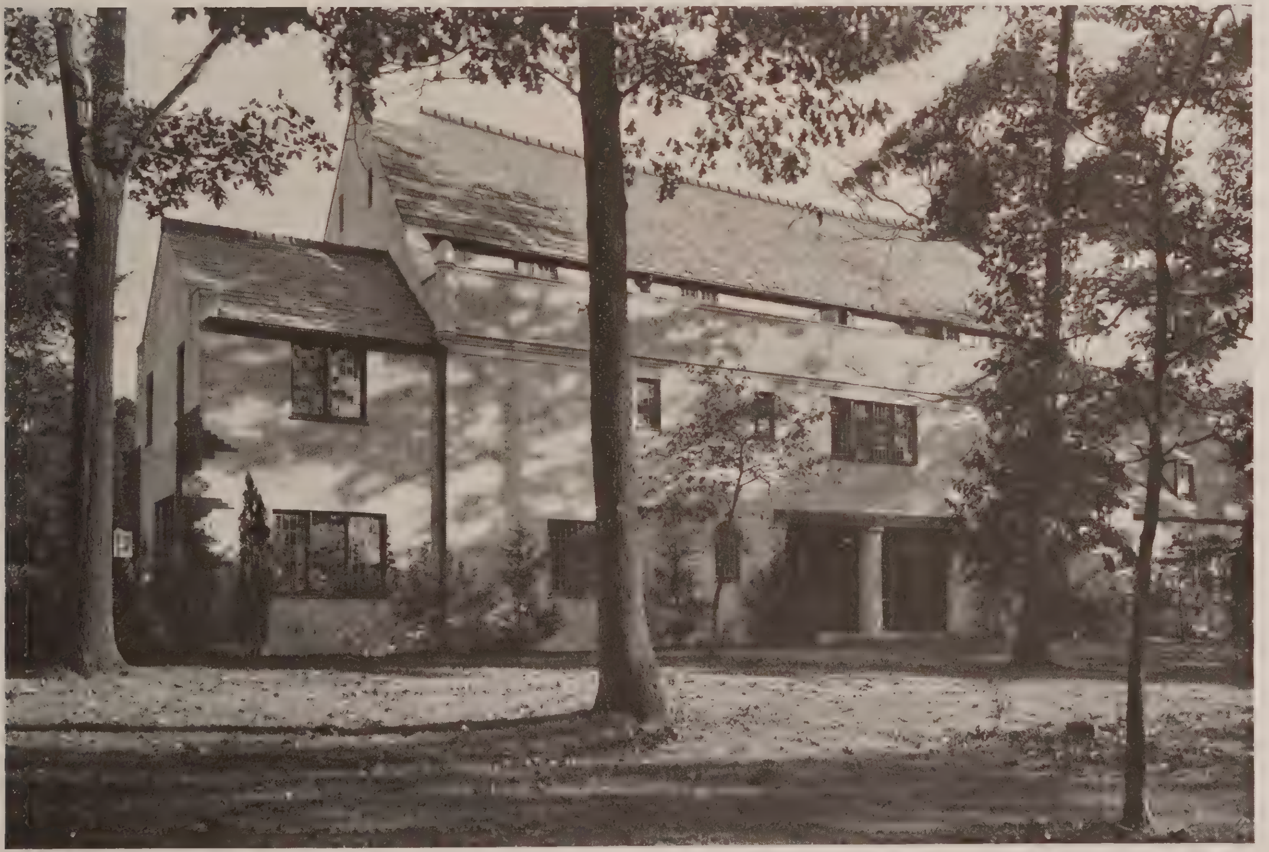


Ordinary building materials handled in manner to secure the utmost effect in color and texture. Walls of whitewashed brick, roofs of cypress shingles, lintels of dark stained oak, flag-paved terrace.

House at Pelham, N. Y.
Howard Major, Architect



GENERAL VIEW OF ENTRANCE FRONT

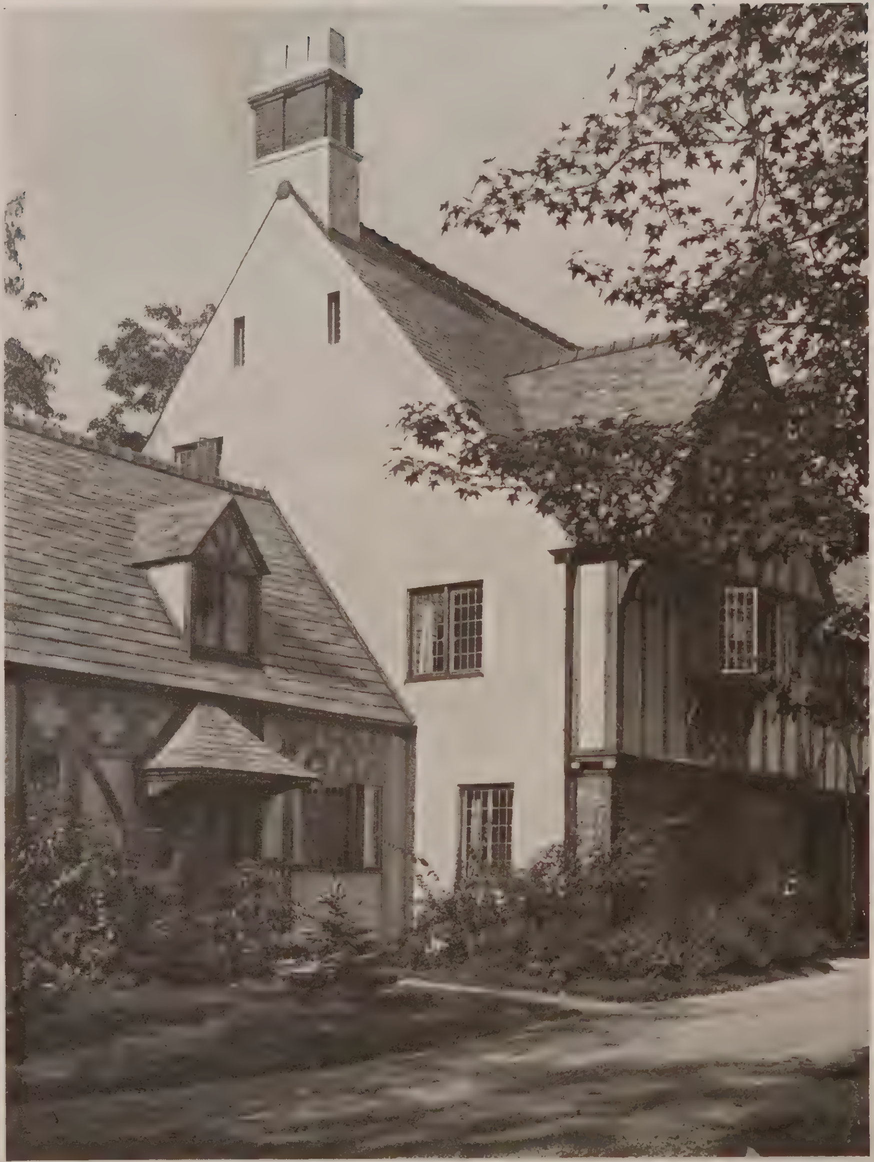


Photos by John Wallace Gillies

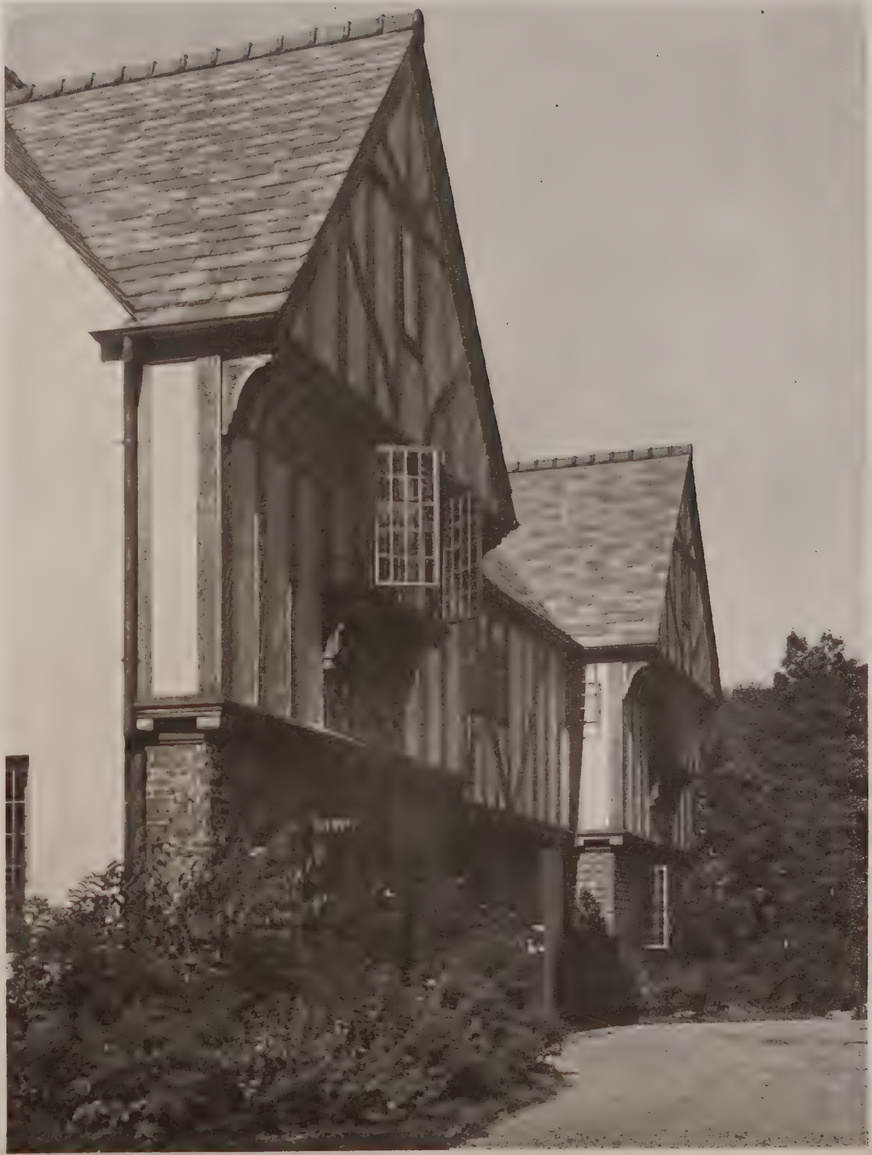
GARDEN FRONT

HOUSE OF LEONARD JOHNSON, ESQ., ENGLEWOOD, N. J.

AYMAR EMBURY II, ARCHITECT; LEWIS E. WELSH, ASSOCIATE



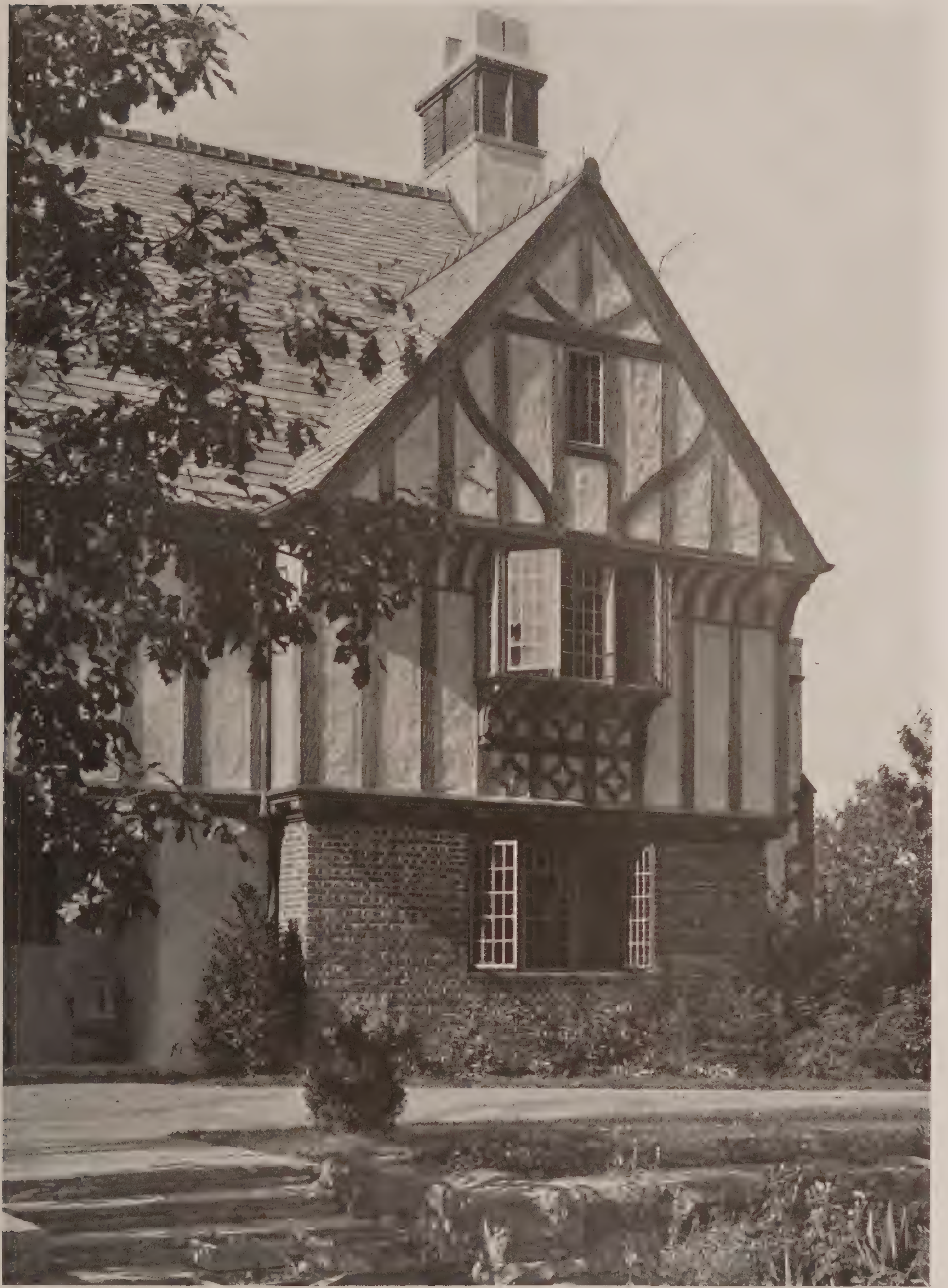
SERVICE WING AND MAIN GABLE



TWIN GABLES ON ENTRANCE FRONT

HOUSE OF LEONARD JOHNSON, ESQ., ENGLEWOOD, N. J.

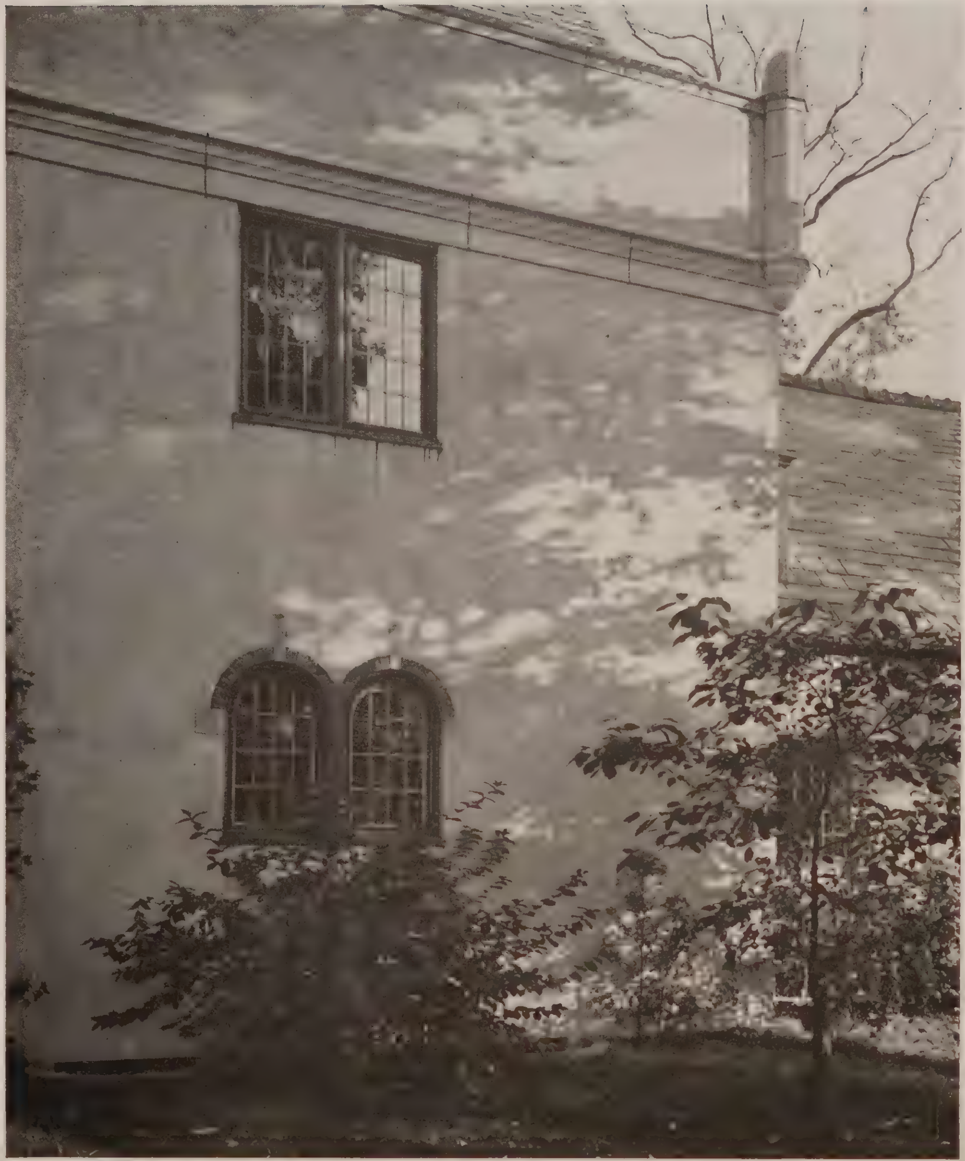
AYMAR EMBURY II, ARCHITECT; LEWIS E. WELSH, ASSOCIATE



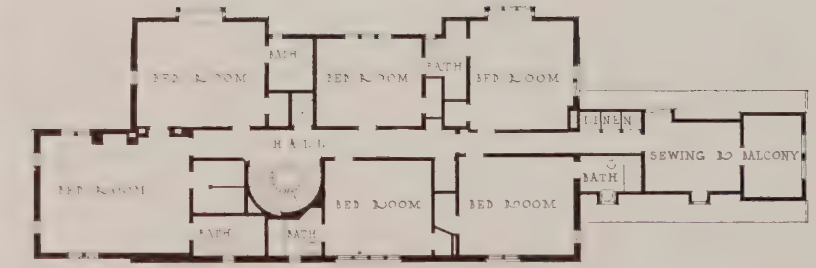
DETAIL OF GABLE ON ENTRANCE FRONT

HOUSE OF LEONARD JOHNSON, ESQ., ENGLEWOOD, N. J.

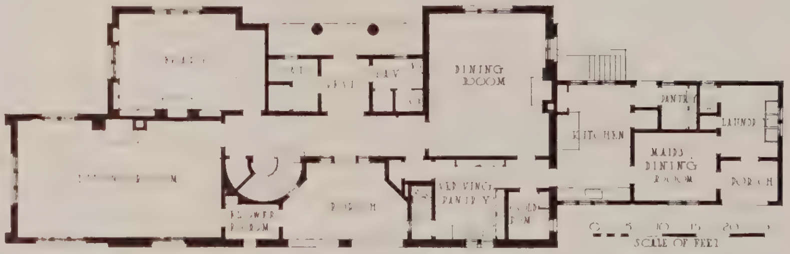
AYMAR EMBURY II, ARCHITECT; LEWIS E. WELSH, ASSOCIATE



DETAIL OF WINDOWS AND PARAPET, GARDEN SIDE



SECOND FLOOR PLAN



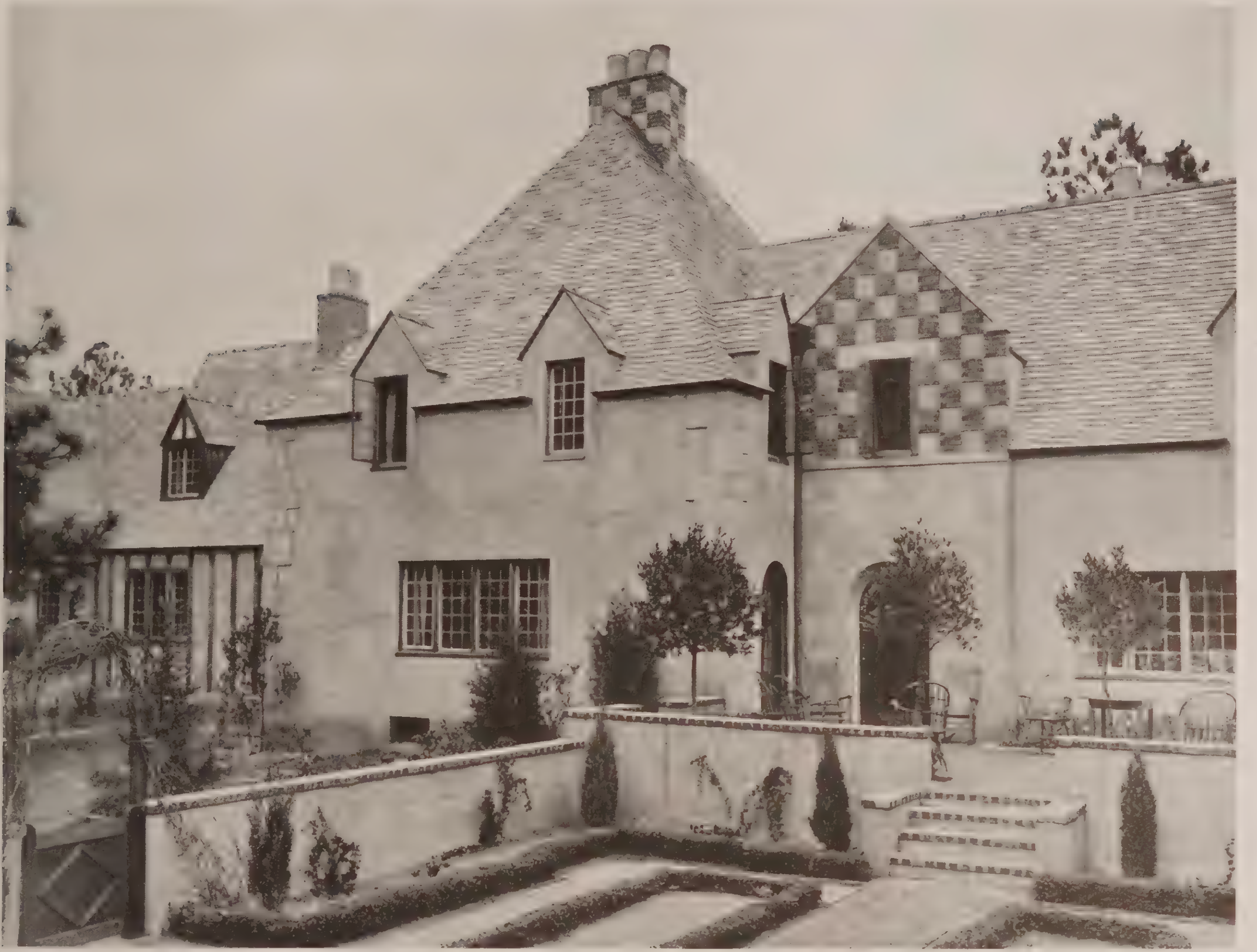
FIRST FLOOR PLAN

THIS house displays the use of English half-timber motifs in pleasing combination with brick and textured stucco. The structural walls are of hollow tile, veneered with brick or coated with stucco in accordance with the design. The timbers are of cypress, hand adzed and pegged. The roofs are covered with graduated and vari-colored slate with tile ridges. Pleasing roof lines are secured by ramping the ridges up to the chimneys. Windows are metal casements with leaded panes. Parapet coping, cornice and chimney caps are cast cement, the joints being laid in dark mortar. Stucco is buff colored, and the exterior woodwork stained gray. Brickwork is laid in English bond with a raked joint. The flat roof on the garden side is covered with gravel and the leaders from the main roof are carried across it and down in the thickness of the exterior wall.

The interior finish is oak with rough plaster walls, some ornamented plaster friezes and cast cement mantels being used in the principal rooms. Floors are of oak, slate for porches. Heating is by a vapor steam system. The house was built in 1919–1920.

HOUSE OF LEONARD JOHNSON, ESQ., ENGLEWOOD, N. J.

AYMAR EMBURY II, ARCHITECT; LEWIS E. WELSH, ASSOCIATE



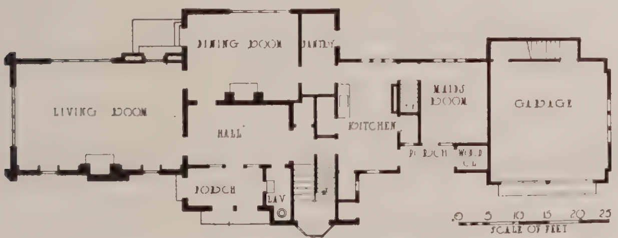
VIEW OF GARDEN SIDE

HOUSE OF MRS. A. P. L. DULL, SOUTHERN PINES, N. C.

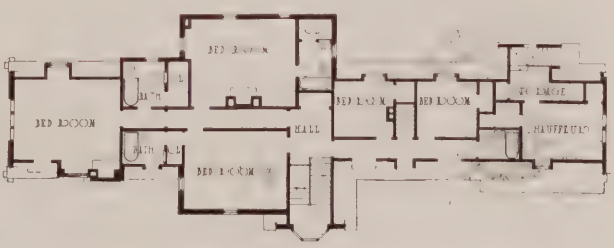
AYMAR EMBURY II, ARCHITECT

TERRA cotta block, stucco, cast concrete and brick are the materials of which the exterior walls of this house are built, the brick being used to give variety or accent to various parts of the building, particularly for a portion of the main facade where the method of laying the brick with bluish headers secures a bold and strikingly decorative diaper effect. Other uses of brick in combination with plain surfaces to supply necessary accent and character are found in the facings of a minor gable and in the principal chimney where brick has been laid in squares alternating with stucco panels, recalling certain French practices which render the house distinctive. The general color scheme of the exterior includes buff in the stucco, red of the brick and a bluish hue on the roofs, supplied by staining the shingles. The low walls which enclose the terrace and the gardens, which are built upon two different levels, are of the same colored stucco with which the house walls are covered, and the walls as well as the steps have top courses of brick which is also used for the paving of the terrace and garden walks.

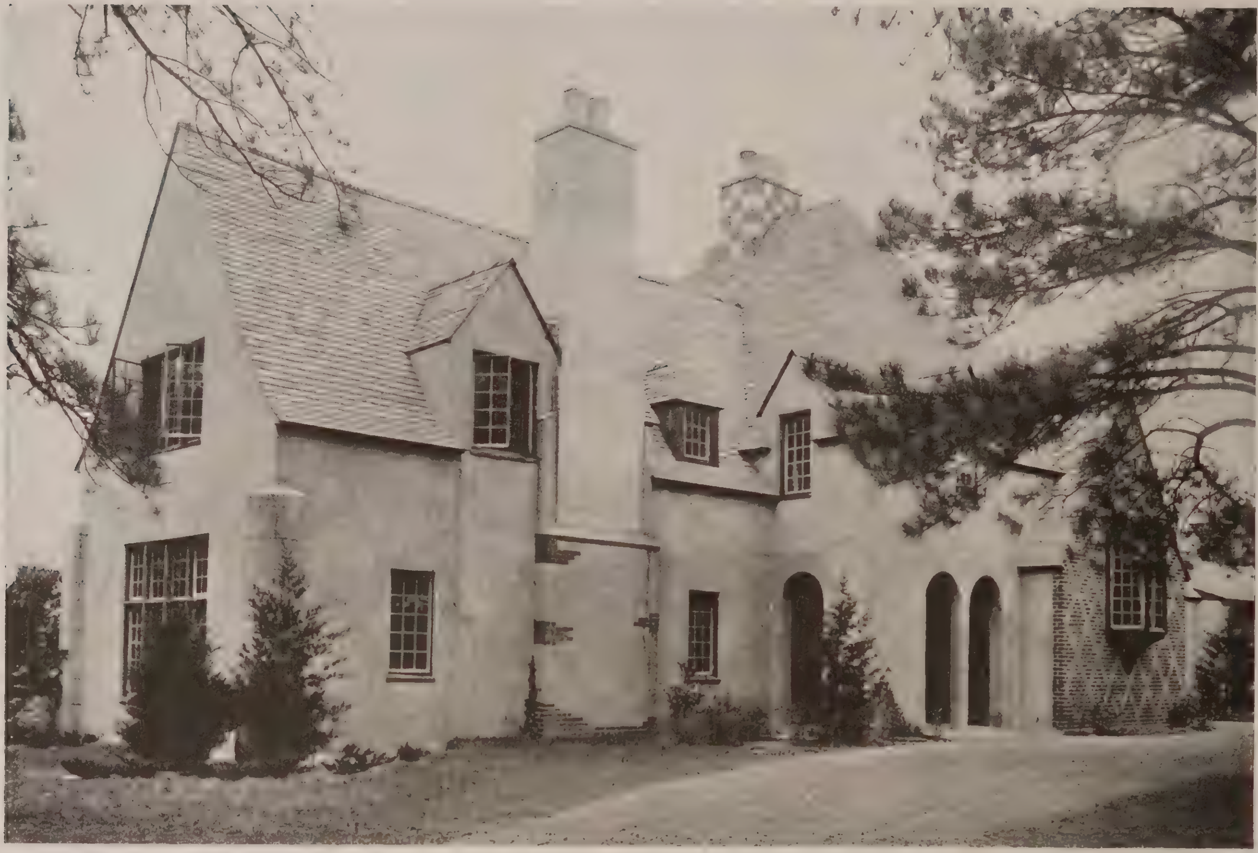
Oak and yellow pine are the woods used for interior finish, and the floors are of black gum. Heating is supplied from a vapor steam heating equipment. The building contract was let in 1921, and the cost of the structure was $27,000.



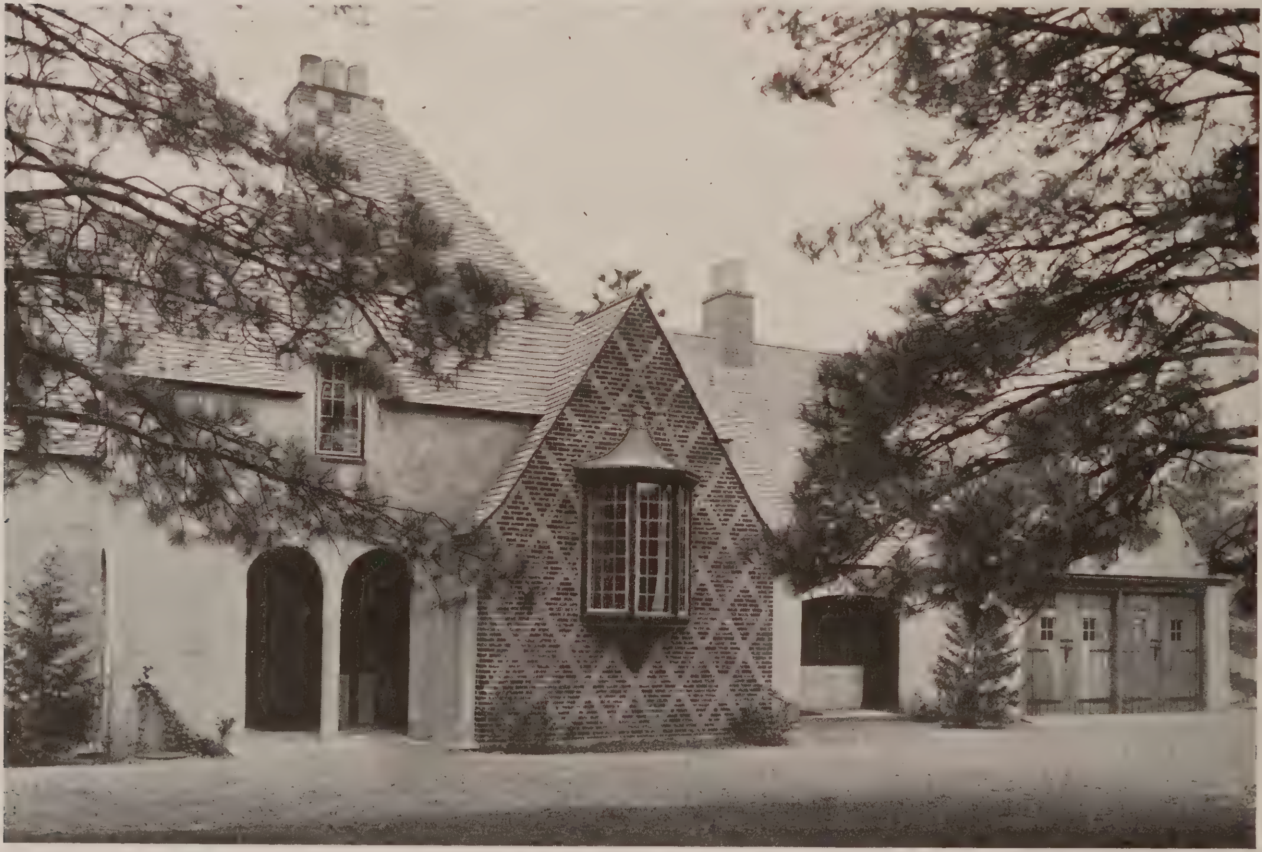
FIRST FLOOR PLAN



SECOND FLOOR PLAN



ENTRANCE FRONT FROM APPROACH



Photos by Eddy's Studio

ENTRANCE FRONT AND SERVICE WING

HOUSE OF MRS. A. P. L. DULL, SOUTHERN PINES, N. C.

AYMAR EMBURY II, ARCHITECT

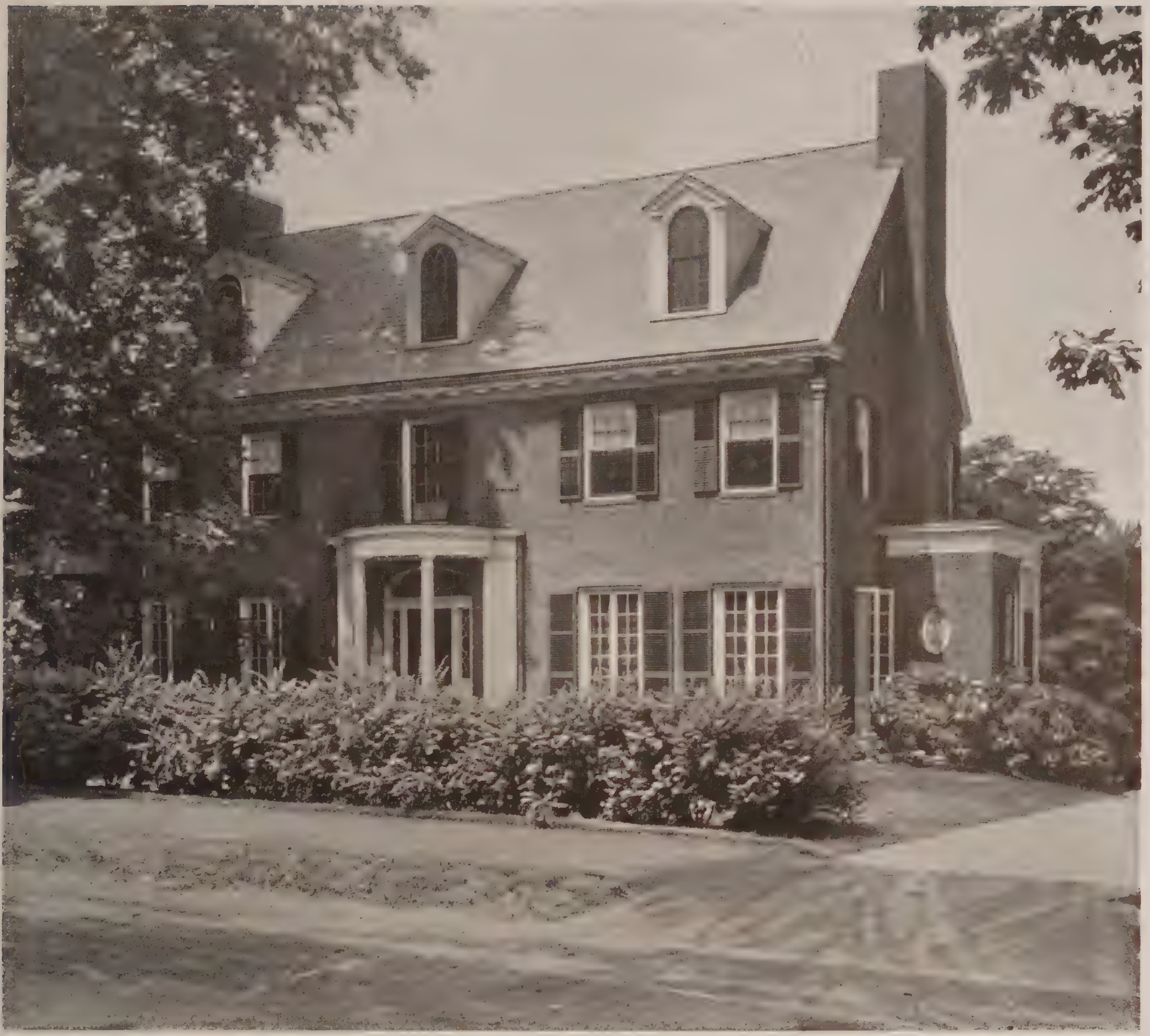


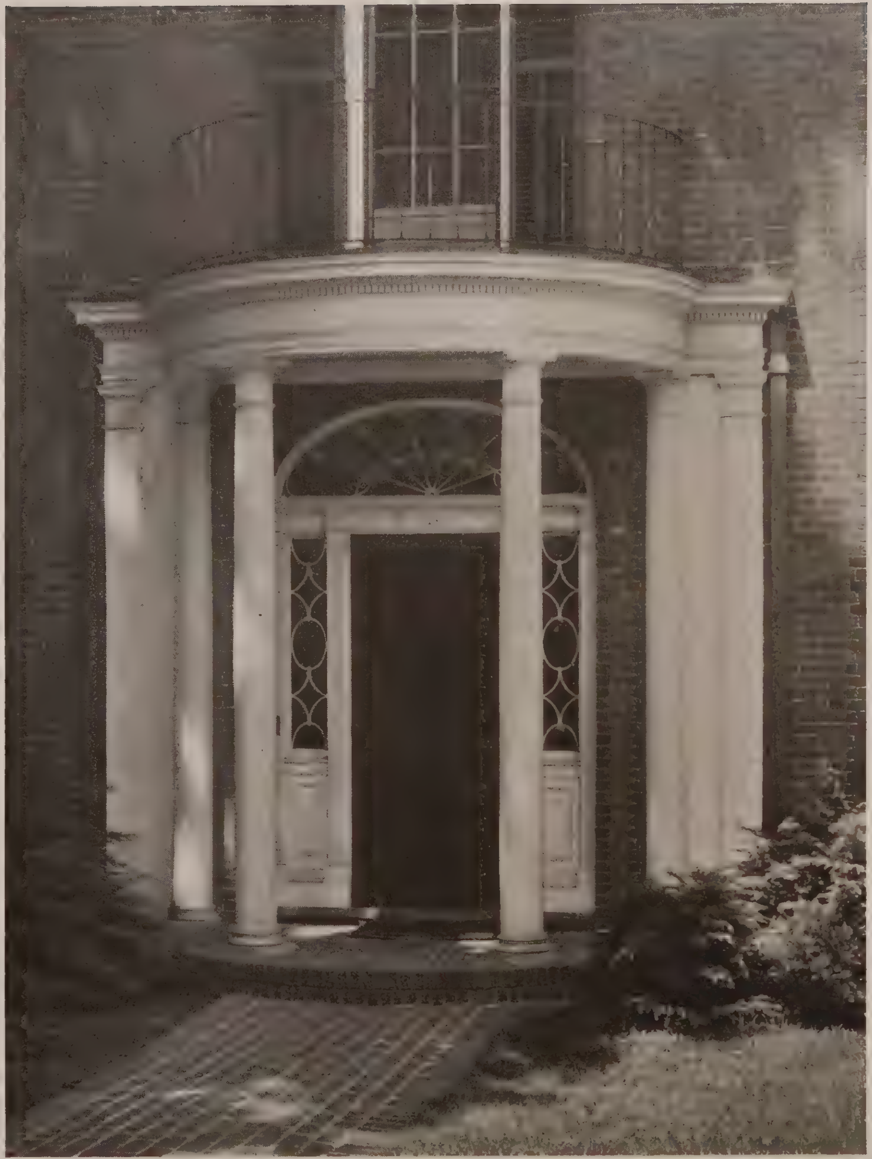
Photo by Paul J. Weber

HOUSE OF THEODORE E. JEWELL, ESQ., NEWTON, MASS.
RALPH C. HENRY, ARCHITECT

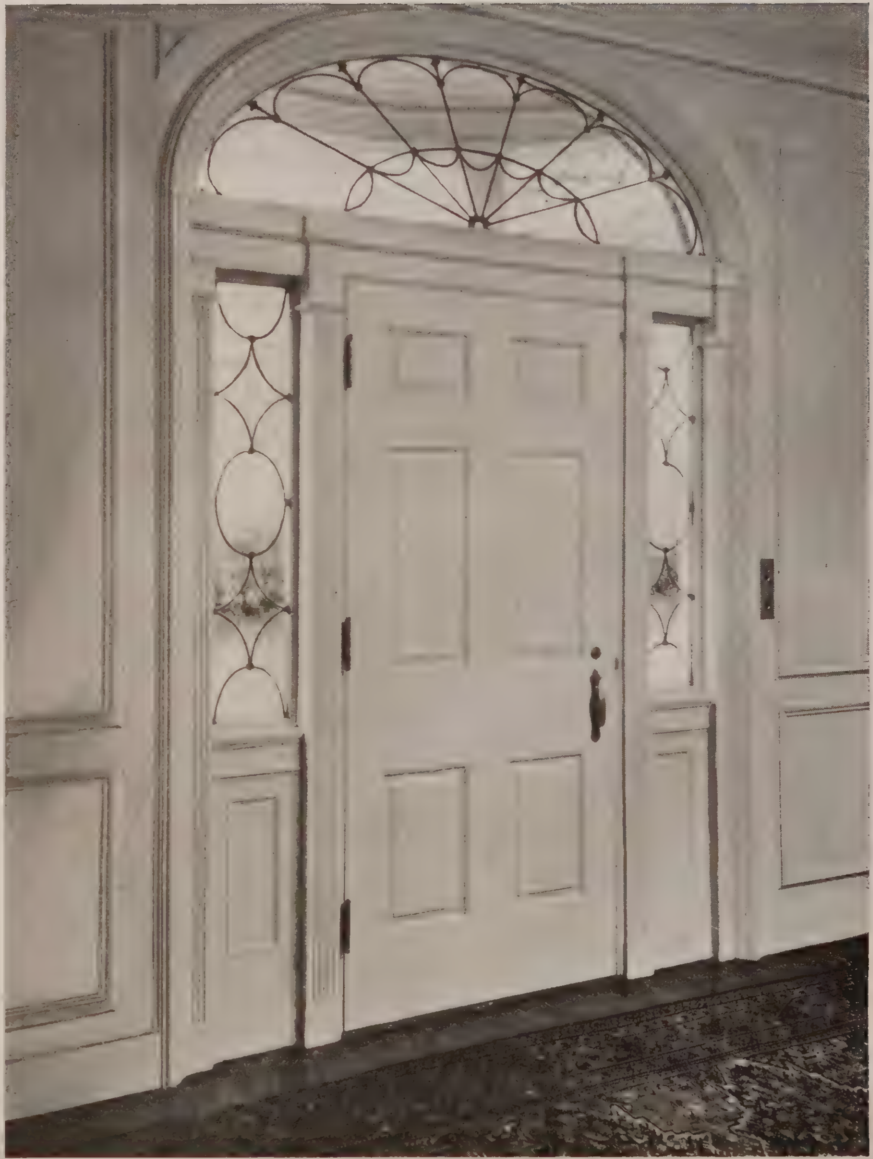
FOR the exterior walls of this house use has been made of a dark, red-brown, water-struck brick. Main roofs are of green slate laid in graduated sizes, and flat roofs where they occur are covered first with pitch and then with gravel of a selected color. The chimneys are of the brick of which the house itself is built, and a cast cement cap finishes each chimney. The handrails at the main entrance and the balustrade which surrounds the roof of the main veranda are of wrought iron painted black. All the exterior trim is painted white, and the blinds at the windows are dark green.

The interior trim, of whitewood and birch, is treated with ivory enamel. The living room mantel possesses a particular interest by reason of the use of panels in low relief, modeled by Frederick Allen. The walls of the oval dining room were first covered with canvas, then divided by mouldings into panels and the walls then painted gray with the wood mouldings enameled to agree with the rest of the woodwork. Floors throughout the house are of oak stained dark colors. The heating is from a system which supplies specially humidified warm air. Space upon the third floor is divided into a billiard room and several maids' rooms and a bath. An interesting detail is the arrangement in connection with one bedroom of what is in effect a sleeping porch. One end of the long room in which are several windows is divided from the rest of the room by a glazed partition with glazed doors. Closing these doors and opening the windows render this end of the room practically out of doors.

The house occupies a plot of considerable depth which is well wooded with old trees, and additional planting has been supplied about the house and garage. Cost of the house and garage was approximately $25,000, and the building contract was placed in January, 1920.

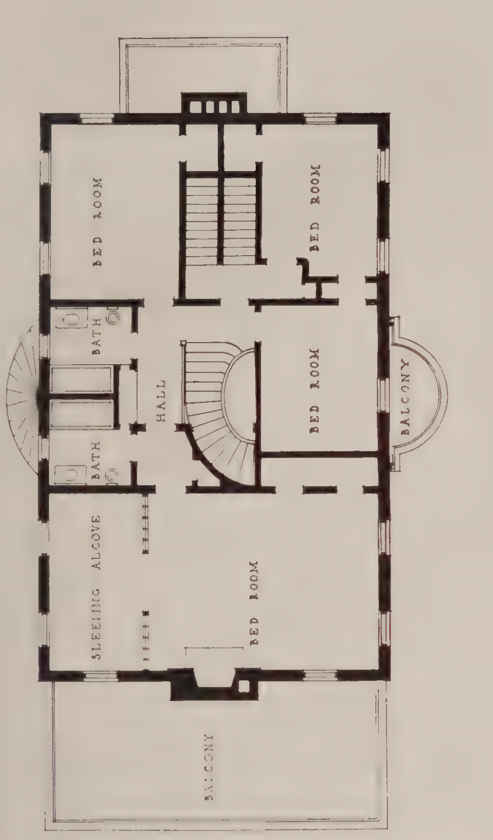


EXTERIOR OF MAIN ENTRANCE

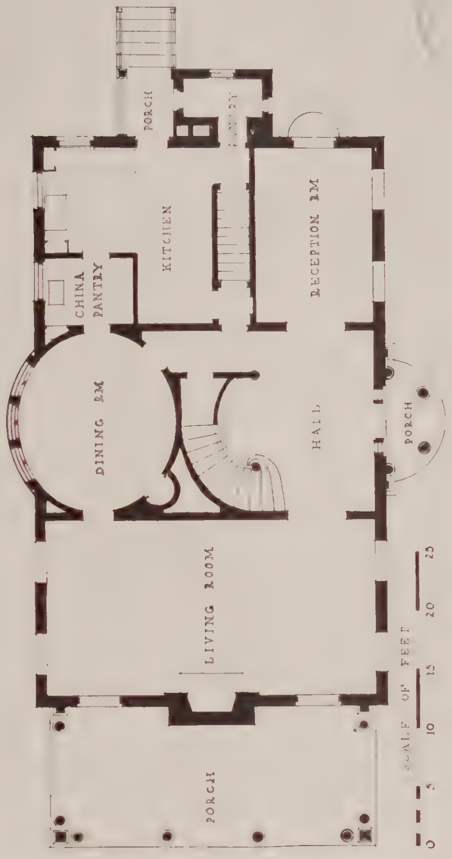


INTERIOR VIEW OF ENTRANCE

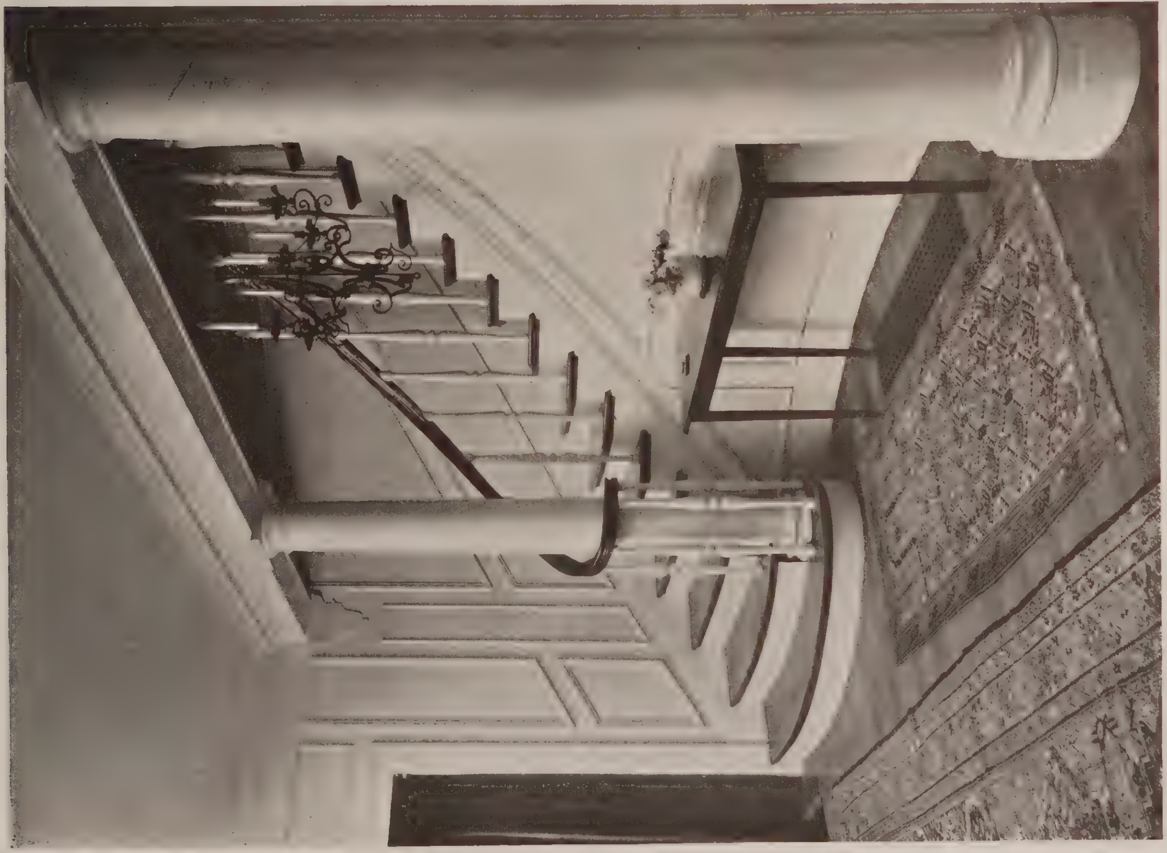
HOUSE OF THEODORE E. JEWELL, ESQ., NEWTON, MASS.
RALPH C. HENRY, ARCHITECT



SECOND FLOOR PLAN

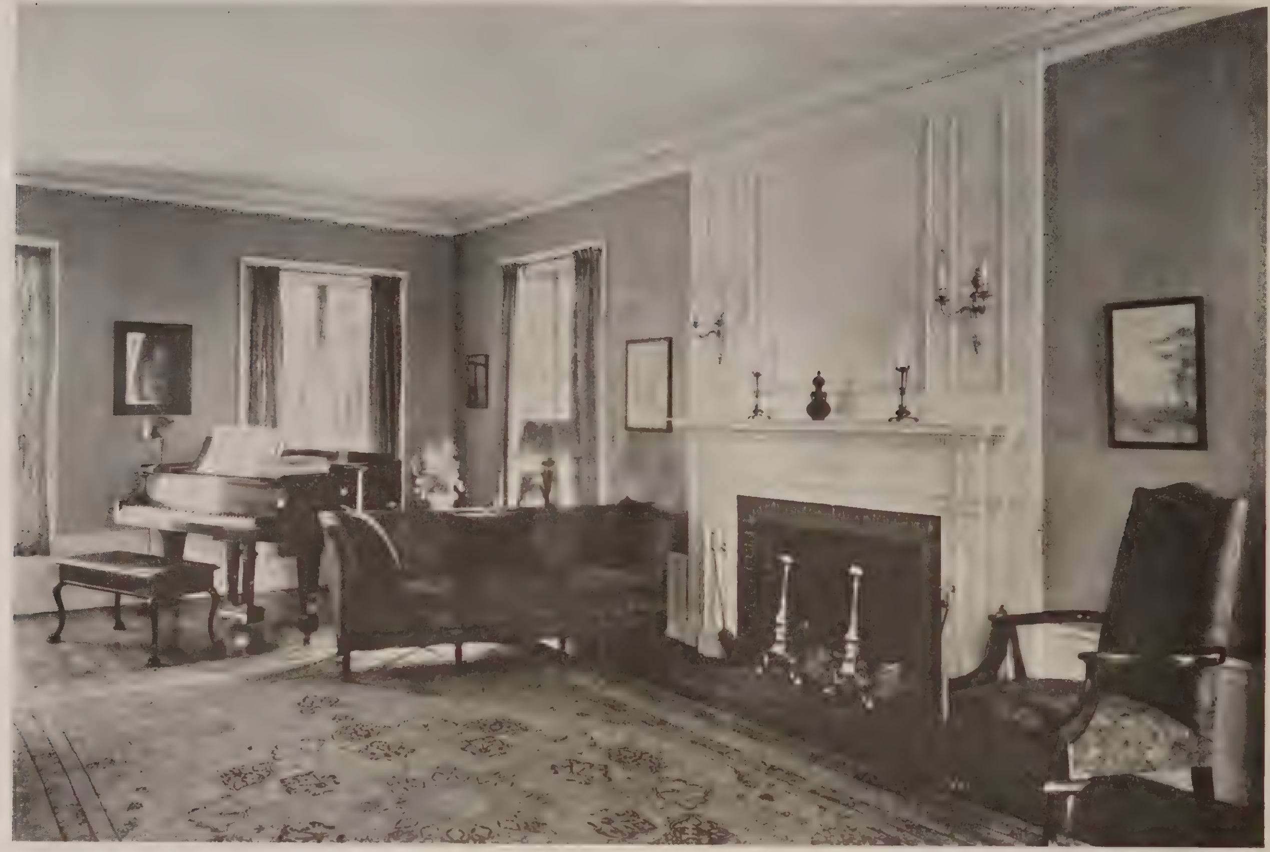


FIRST FLOOR PLAN

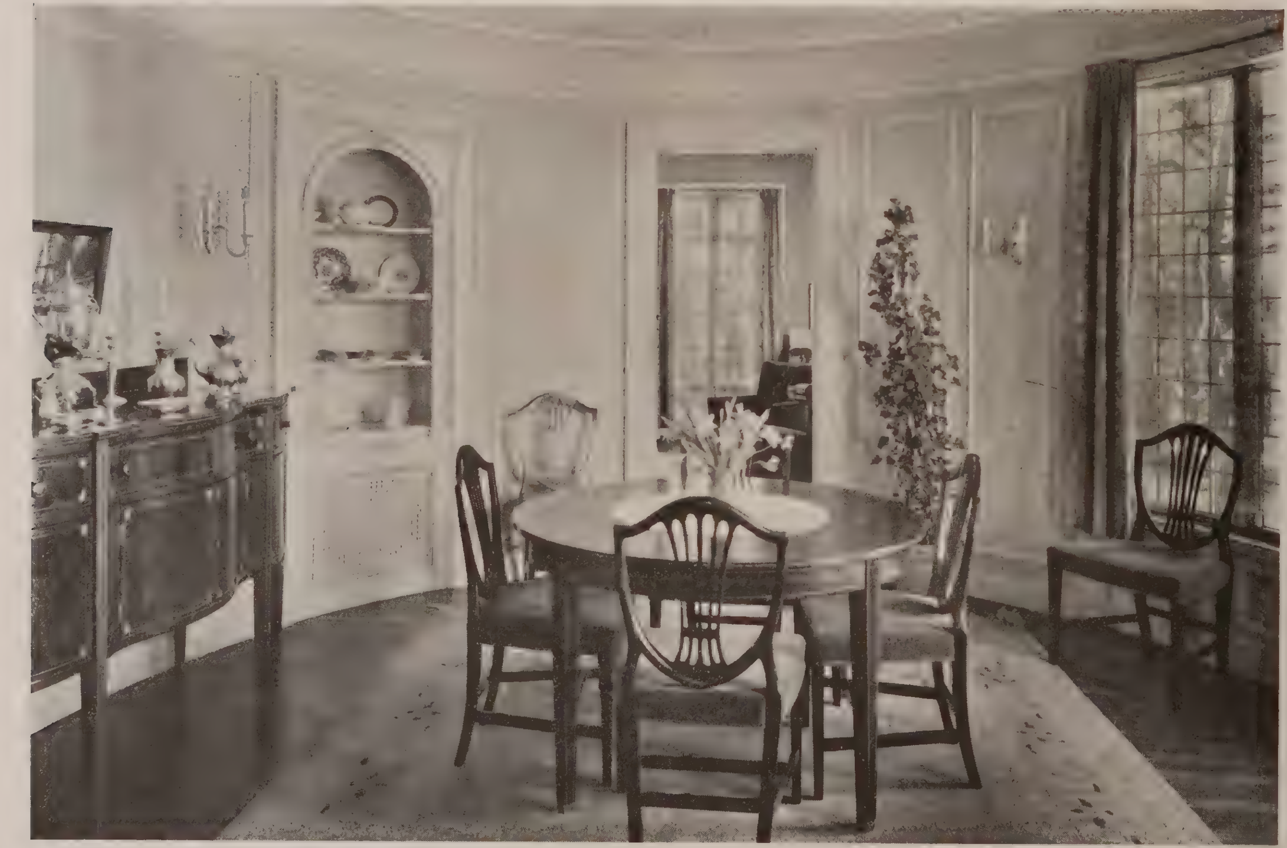


DETAIL OF STAIRCASE

HOUSE OF THEODORE E. JEWELL, ESQ., NEWTON, MASS.
RALPH C. HENRY, ARCHITECT



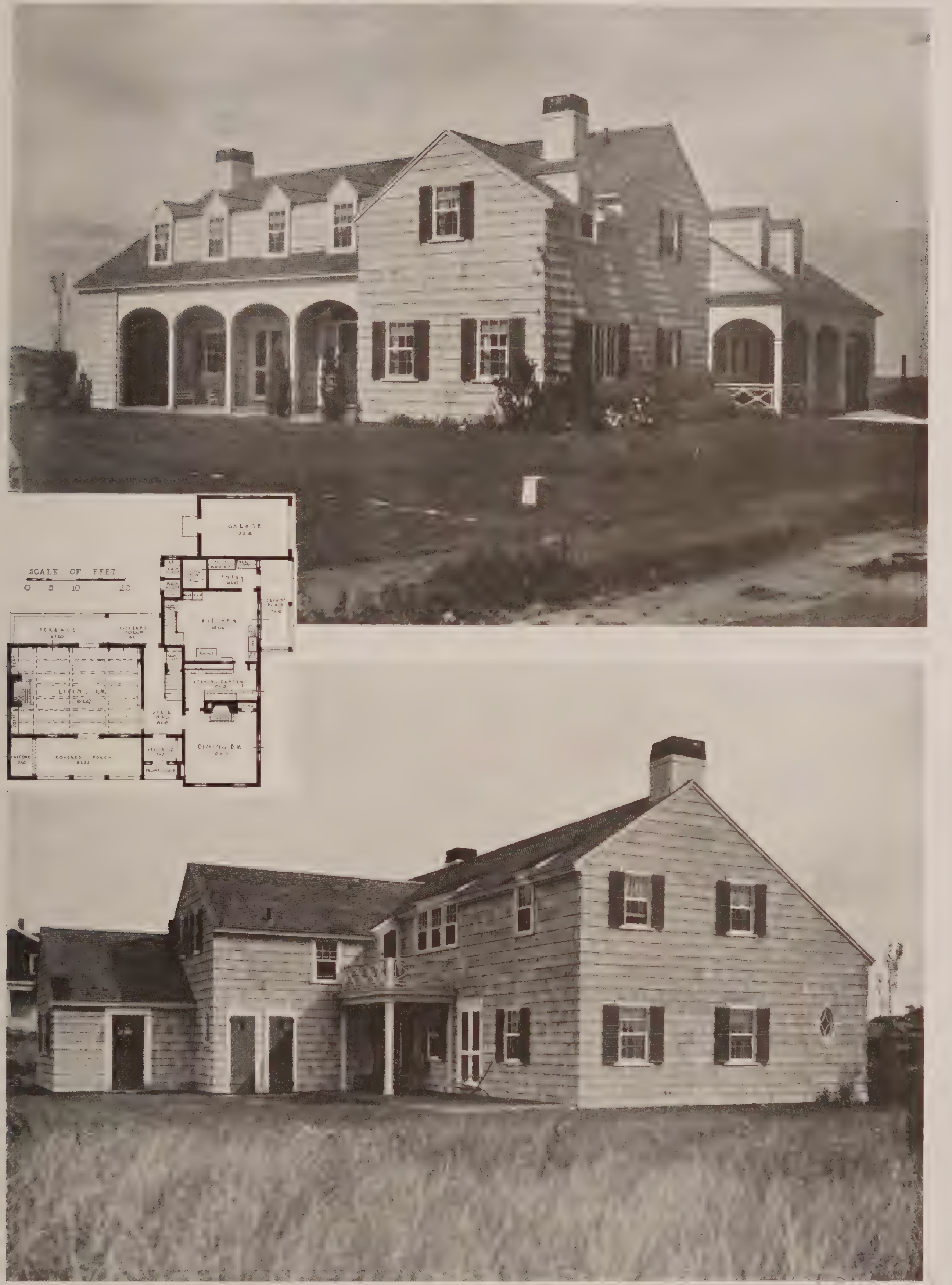
LIVING ROOM



DINING ROOM

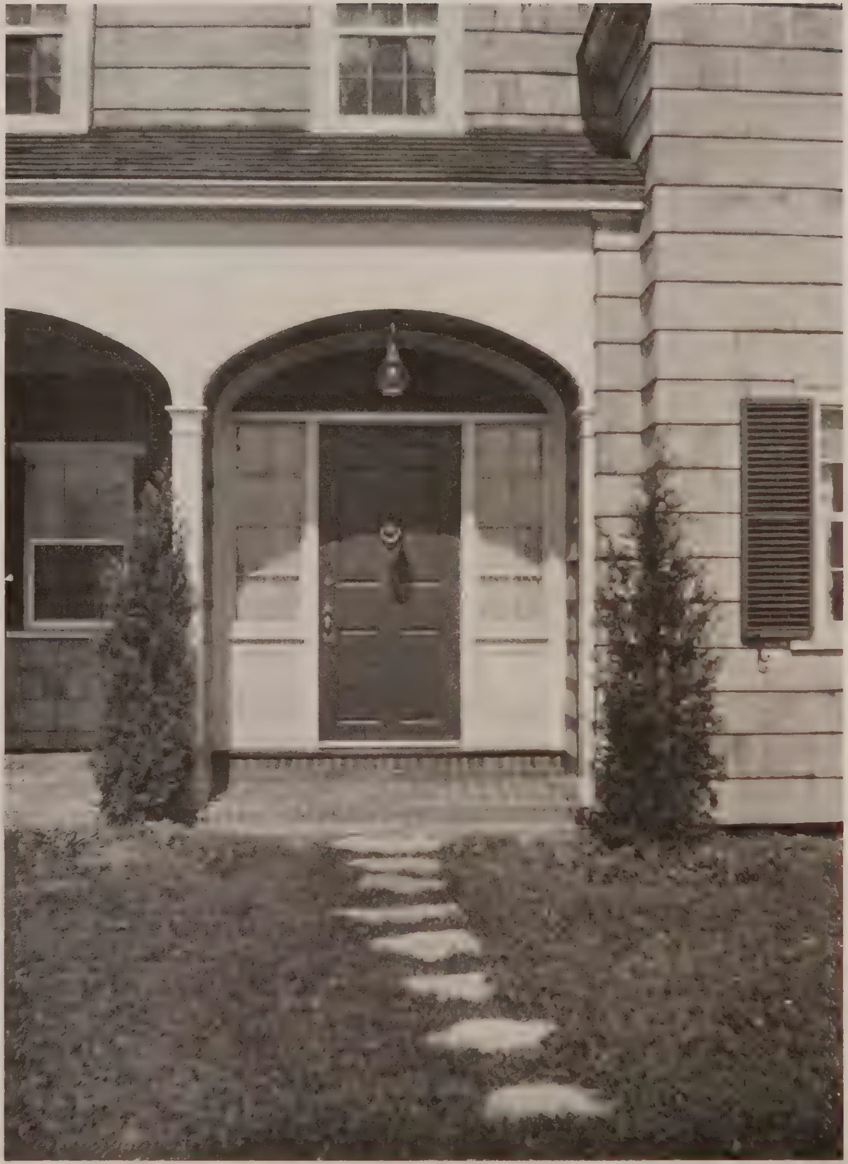
HOUSE OF THEODORE E. JEWELL, ESQ., NEWTON, MASS.

RALPH C. HENRY, ARCHITECT

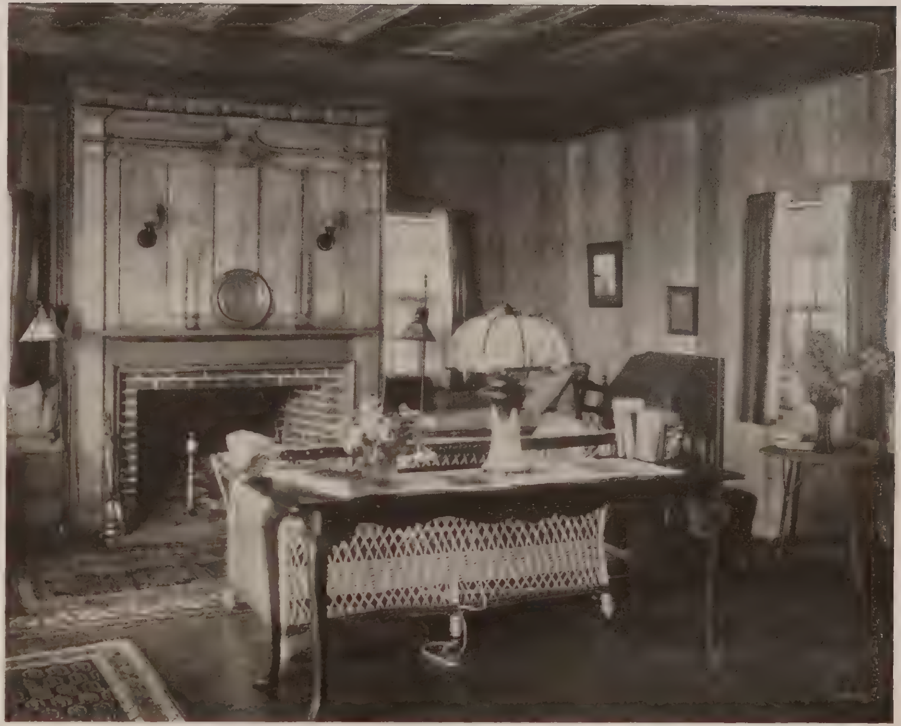


Photos by Paul J. Weber

EXTERIOR VIEWS AND FIRST FLOOR PLAN
HOUSE OF HECTOR J. HUGHES, ESQ., WOODS HOLE, MASS.
EDWARD SEARS READ, ARCHITECT

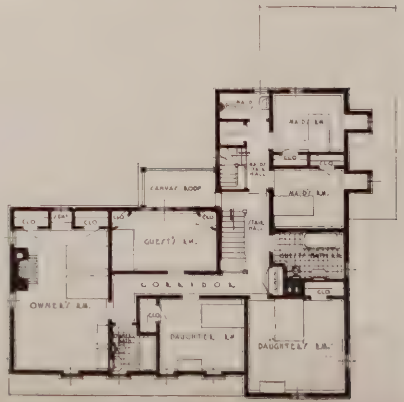


DETAIL OF ENTRANCE



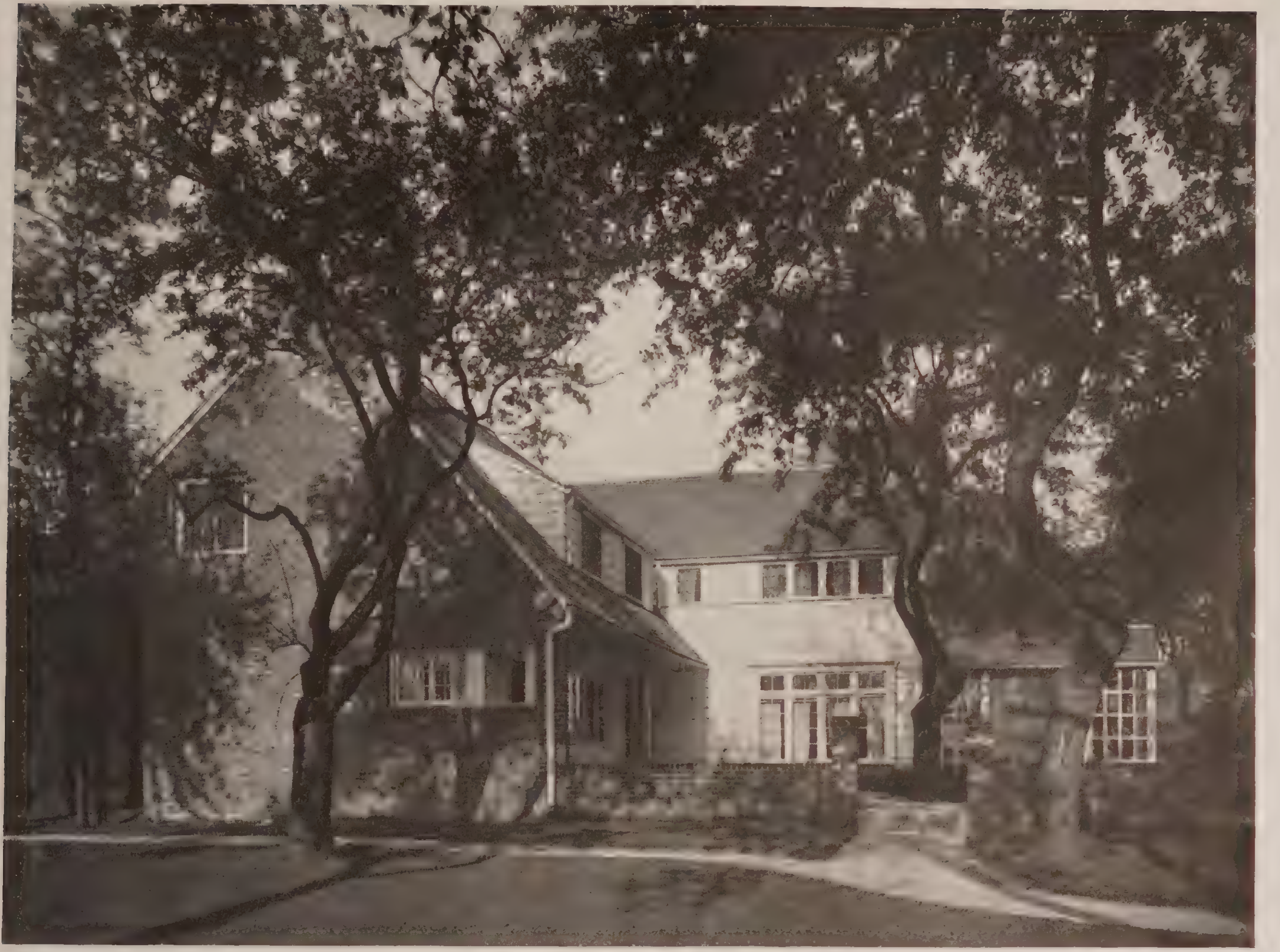
LIVING ROOM

SHINGLES 24 inches wide and colored strong cream cover the walls of this house. Trim is white and blinds green; chimneys white, topped with black. Interior walls throughout are North Carolina pine moulded sheathing boards. Floors are of oak and pine. Since the house is intended for occupancy during the summer months only, no heating equipment has been provided. The contract was let during November, 1921, at a cubic foot cost of 37 cents including lighting fixtures.

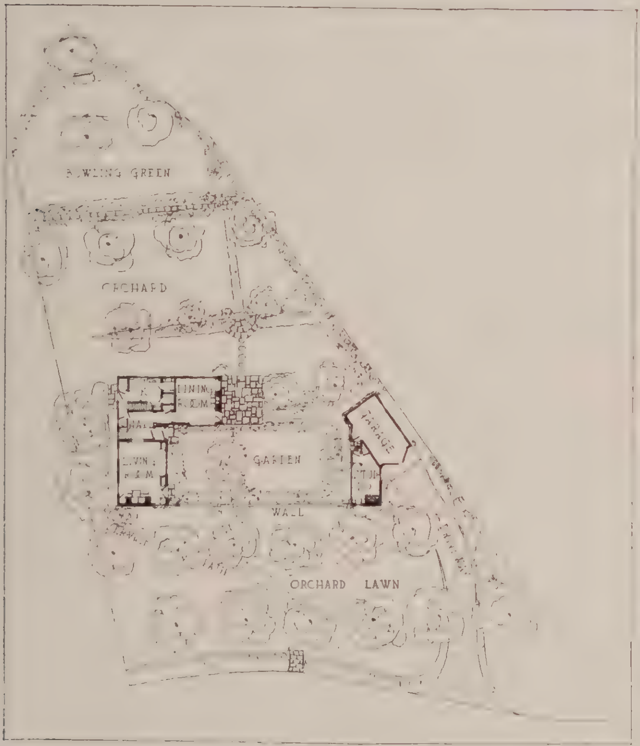


SECOND FLOOR PLAN

HOUSE OF HECTOR J. HUGHES, ESQ., WOODS HOLE, MASS.
EDWARD SEARS READ, ARCHITECT

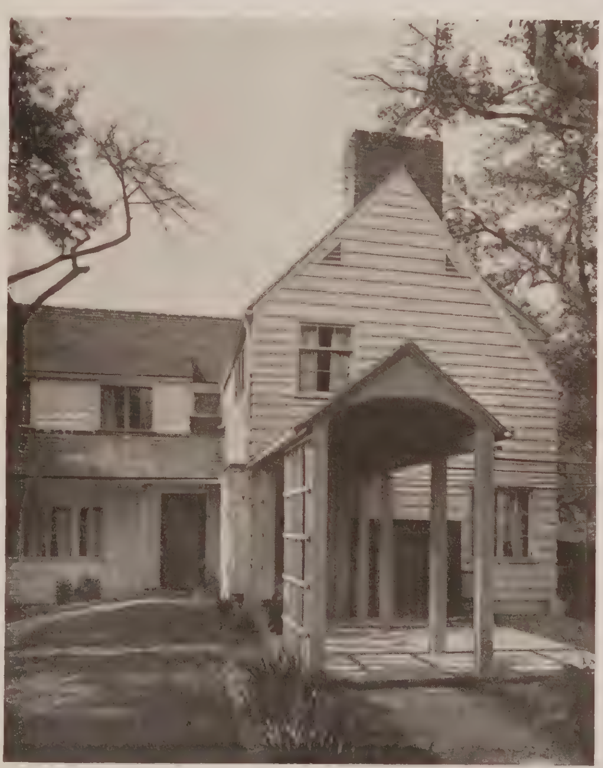


GENERAL VIEW FROM APPROACH



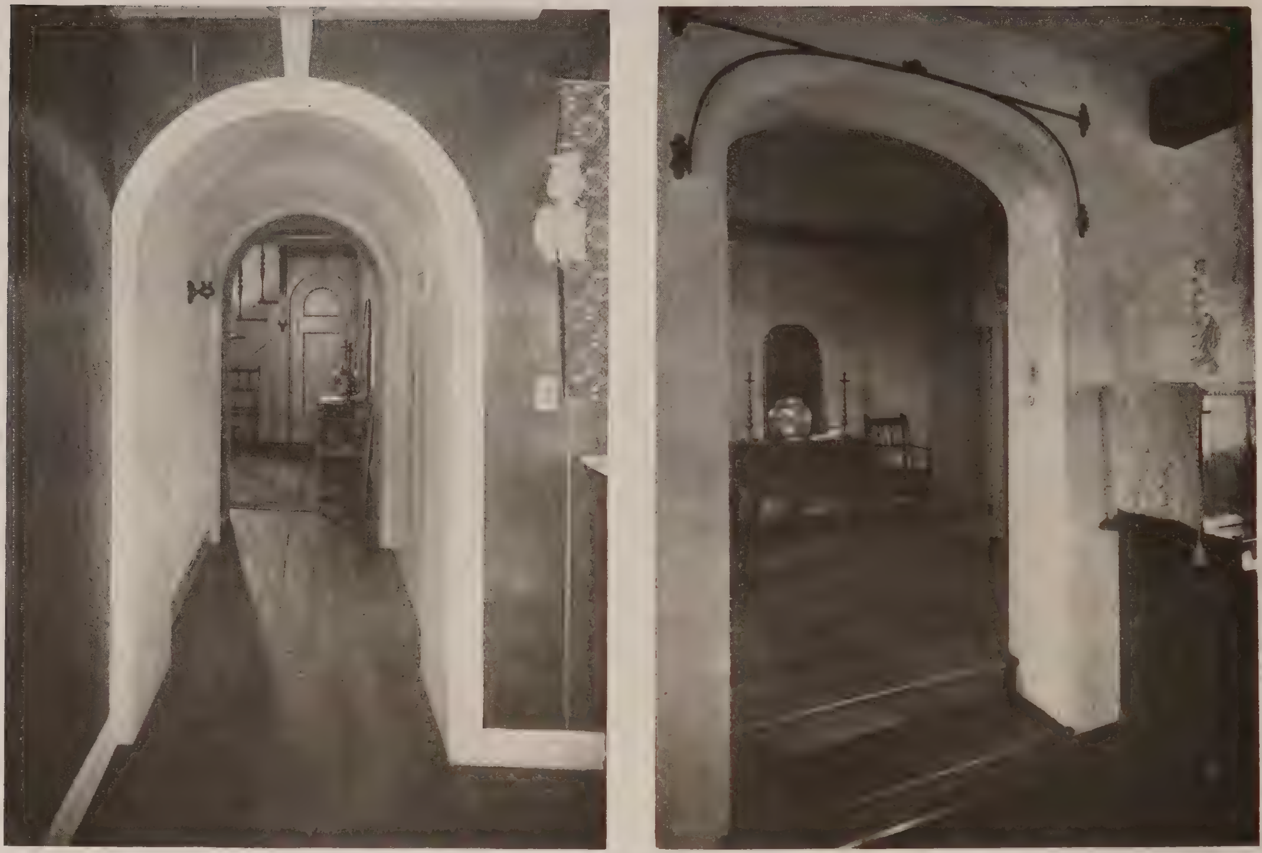
Photos by *John Wallace Gillies*

PLOT PLAN



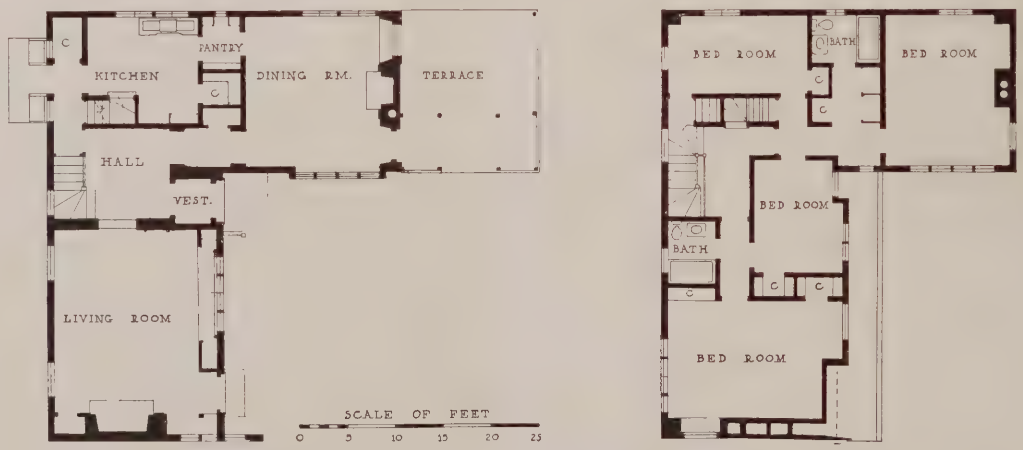
DINING ROOM END

"ORCHARD HOUSE," PORT WASHINGTON, N. Y.
WESLEY SHERWOOD BESSELL, ARCHITECT AND OWNER



TWO VIEWS SHOWING INTERIOR TREATMENT

THE exterior walls of this house are of red brick and of clapboards of various widths painted white. The roofs are covered with shingles and the exterior doors have been painted green. Interior woodwork, including the sheathing of certain walls, is of stained birch or of other woods which have been painted. Oak boards of random widths have been used for flooring, the boards screwed with heads counter-sunk and then plugged, driven up tight and allowed to shrink to their extremes; the crevices when they have opened to their widest are to be filled with hot sulphur. Heating is supplied by a vacuum system. The house was completed in June, 1920, and the cost was $30,000.

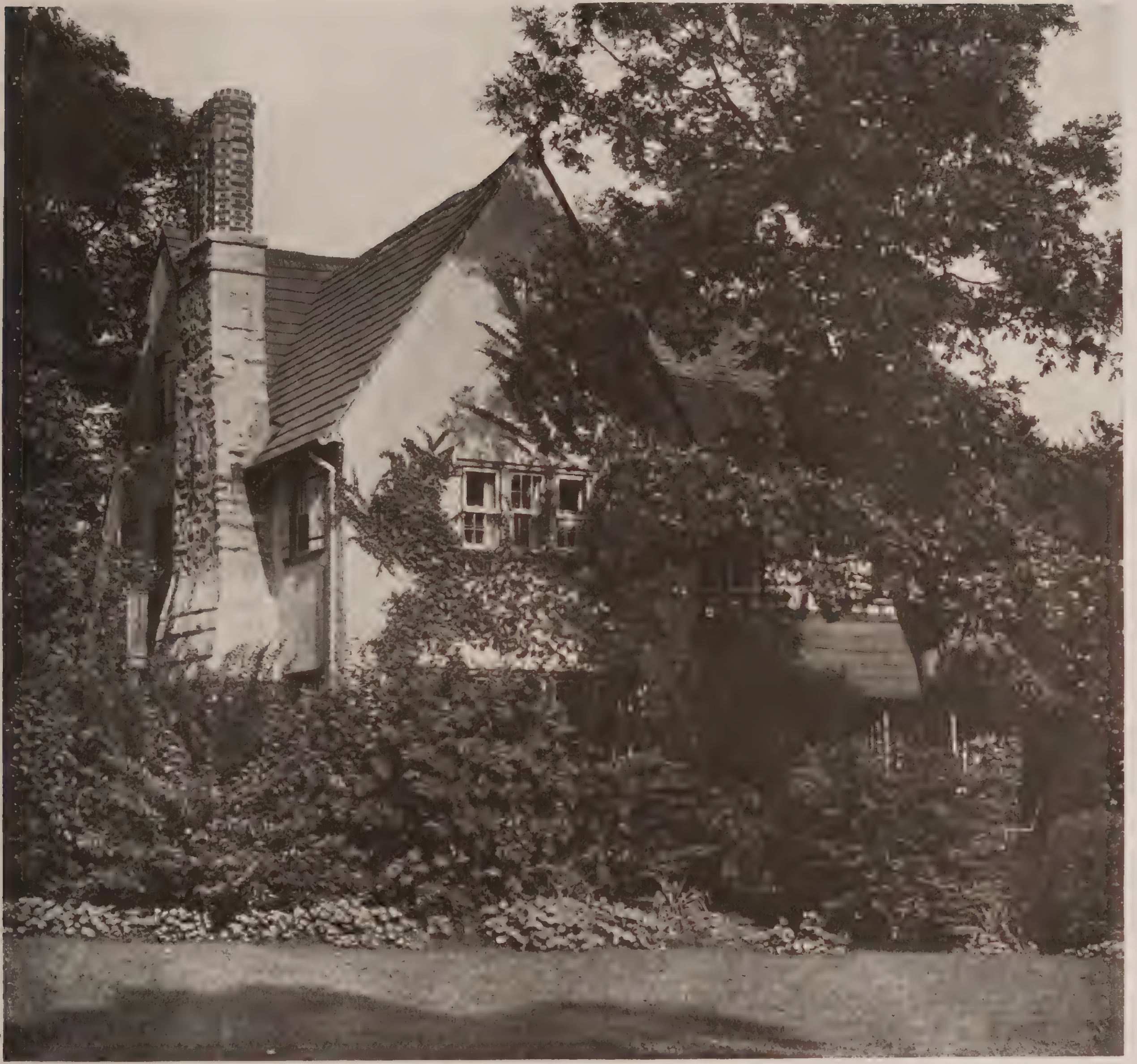


FIRST FLOOR PLAN

SECOND FLOOR PLAN

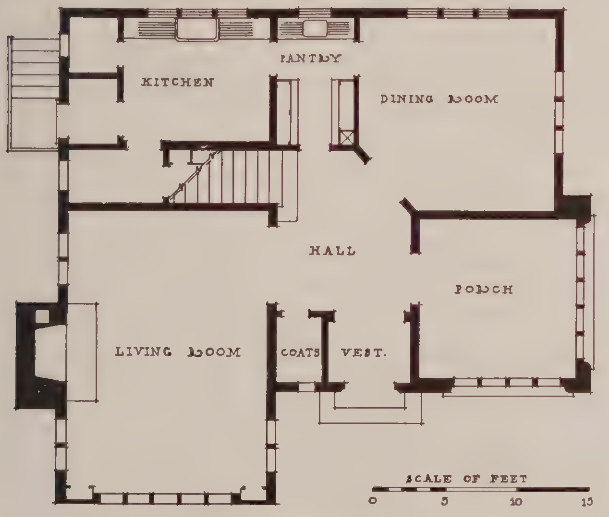
"ORCHARD HOUSE," PORT WASHINGTON, N. Y.

WESLEY SHERWOOD BESSELL, ARCHITECT AND OWNER

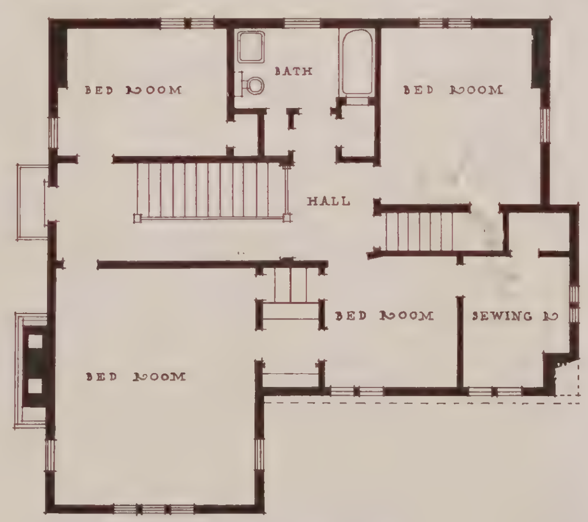


Photos by John Wallace Gillies

VIEW FROM THE ROAD



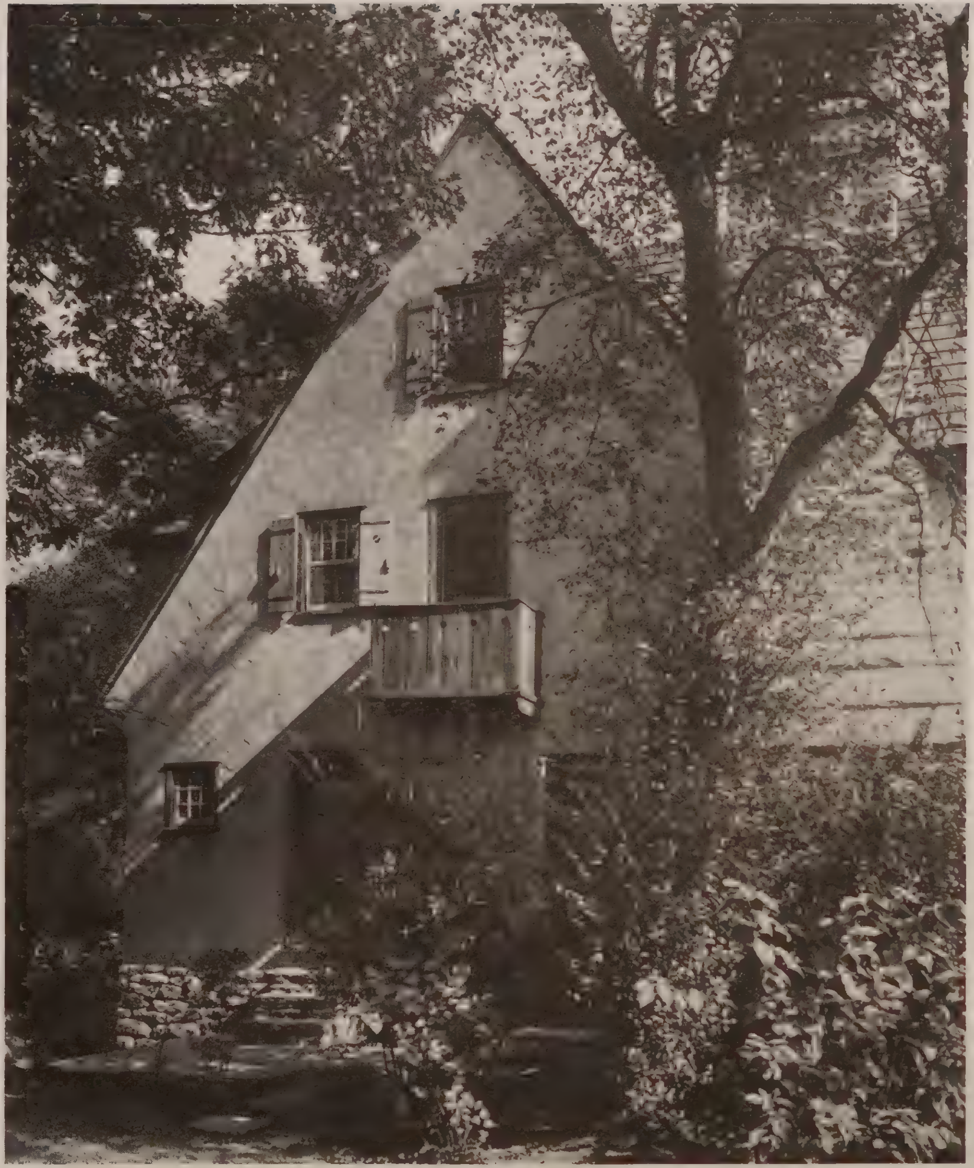
FIRST FLOOR PLAN



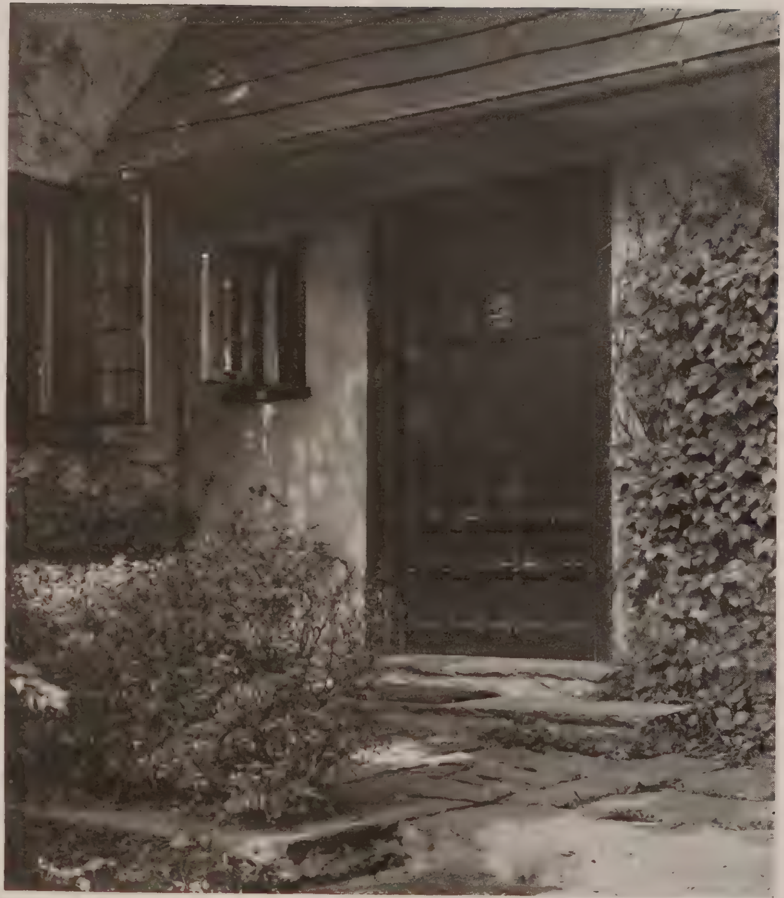
SECOND FLOOR PLAN

HOUSE OF GEORGE TAYLOR, ESQ., MOUNT VERNON, N. Y.

LEWIS BOWMAN, ARCHITECT



DETAIL OF SERVICE END

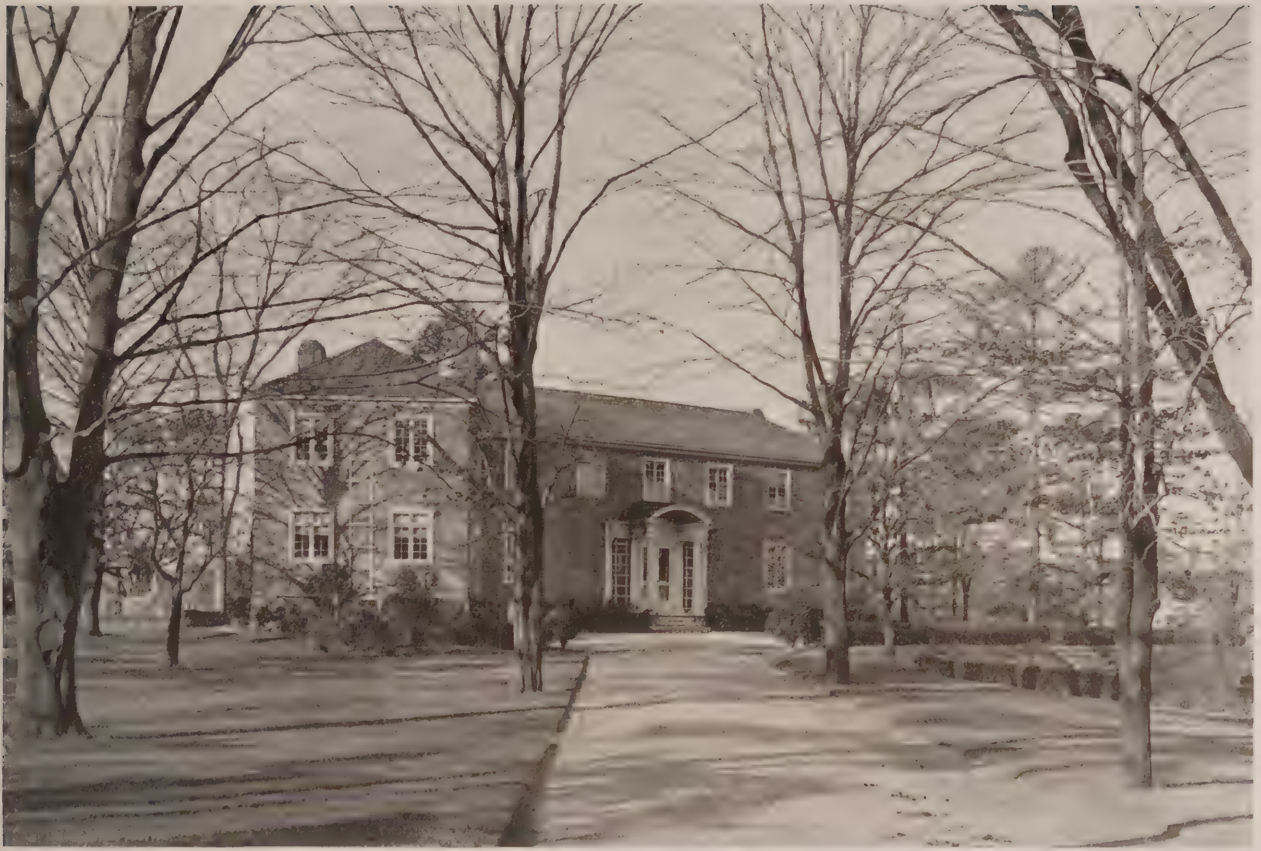


DETAIL OF ENTRANCE

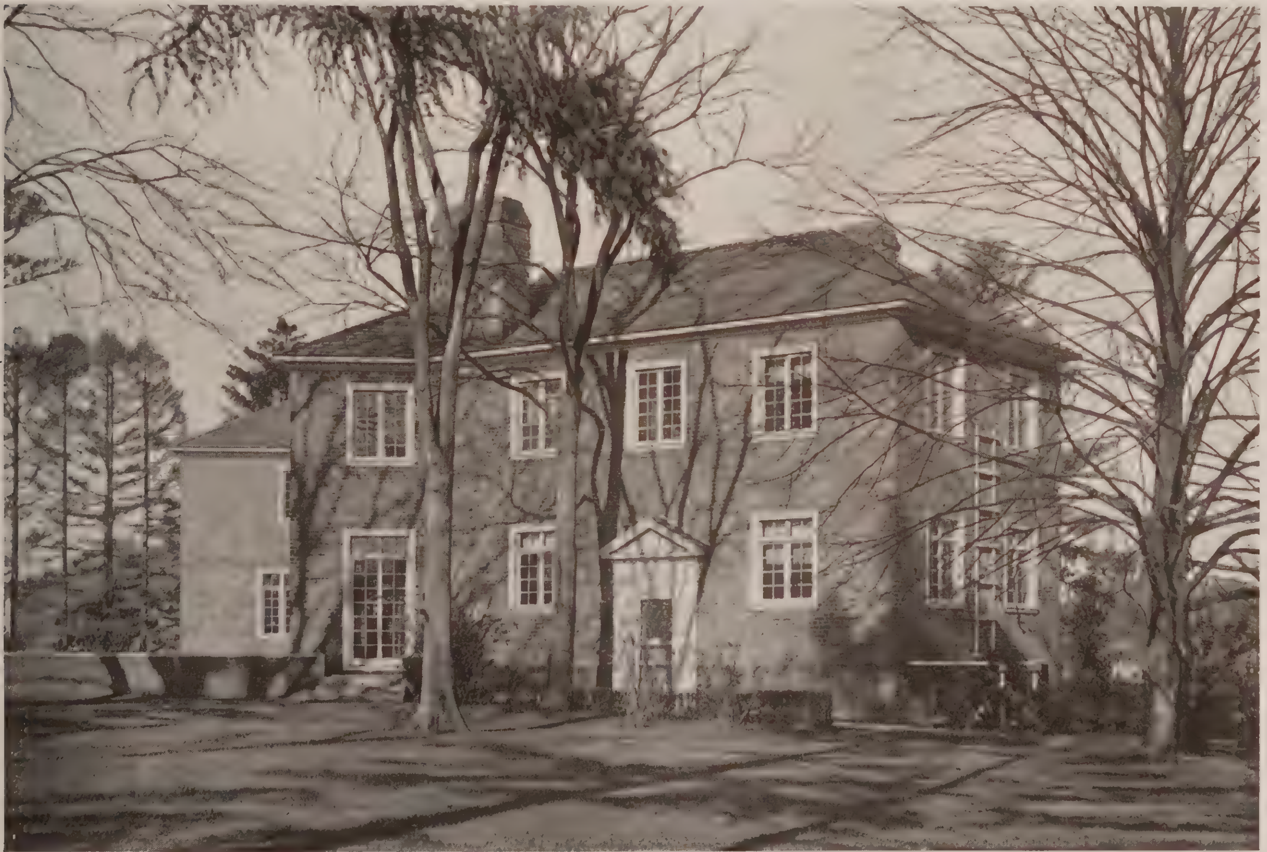
WITH the foundations and outside chimney of stone the walls of this house are of rough stucco, laid on with a mason's trowel as the inside of a cellar wall is pointed. Roof is of hand-split red cedar shingles laid irregularly. Exterior trim is stained. The chimney is topped with brick laid to give something of the effect of chimney pots. The enclosed porch off the hall is sometimes used as a breakfast room. House was built in 1917.

HOUSE OF GEORGE TAYLOR, ESQ., MOUNT VERNON, N. Y.

LEWIS BOWMAN, ARCHITECT



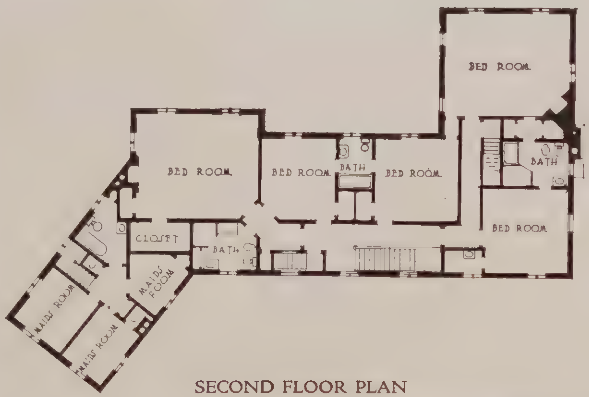
GENERAL VIEW FROM APPROACH



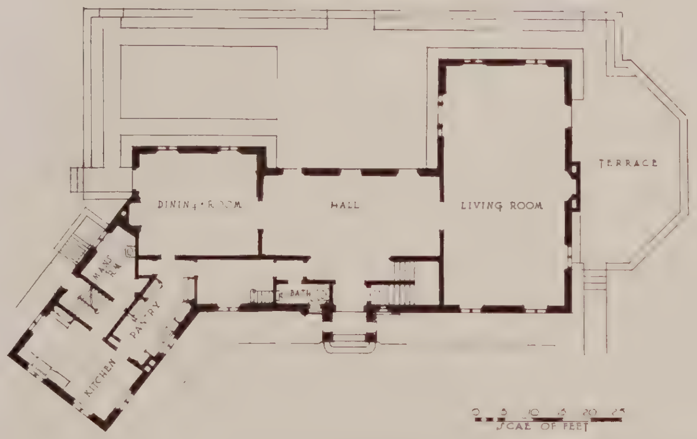
VIEW OF SERVICE END

HOUSE FOR MRS. NORTHRUP CASTLE, NEW ROCHELLE, N. Y.

FRANK A. COLBY, ARCHITECT

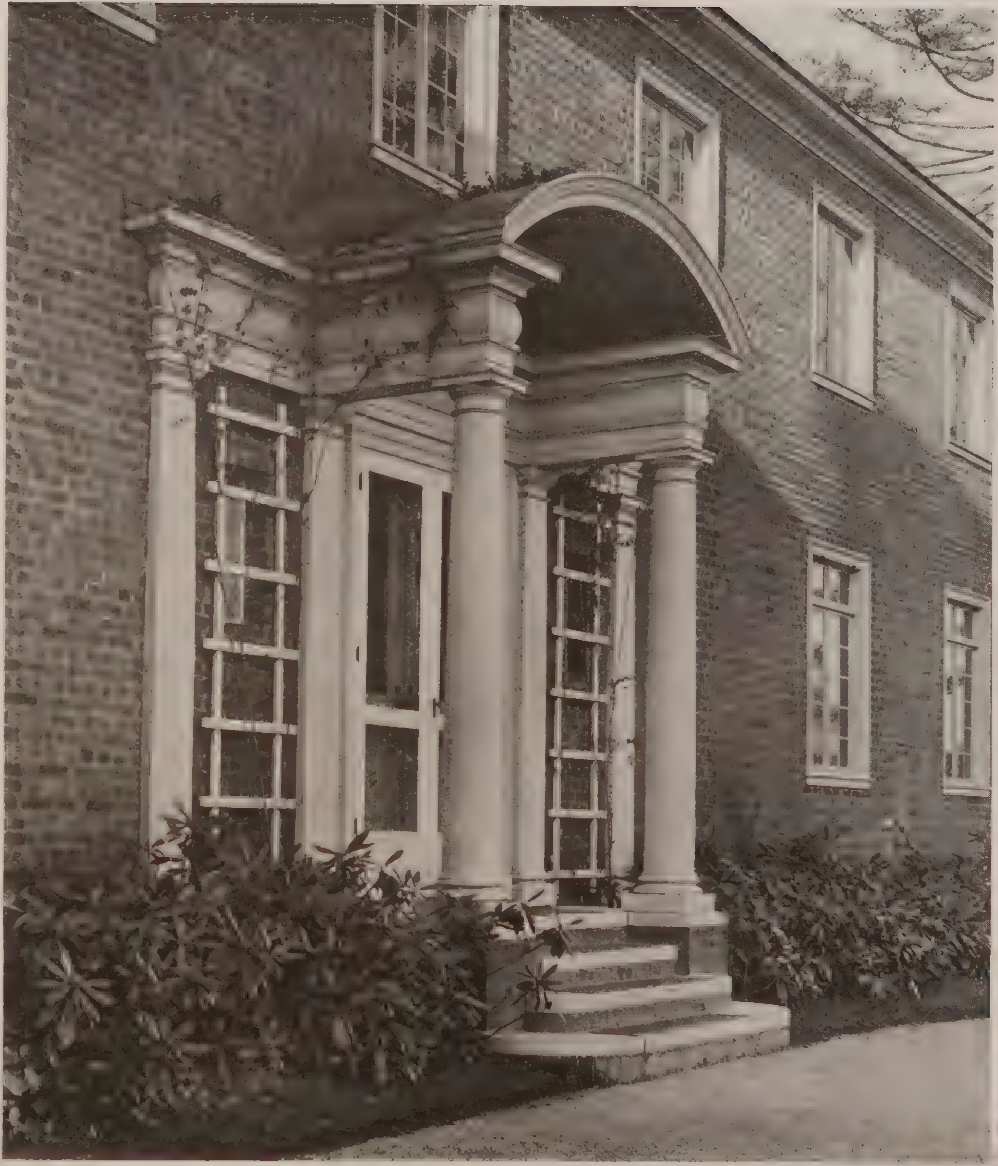


SECOND FLOOR PLAN



FIRST FLOOR PLAN

THE walls are dull Venetian red brick laid in Dutch bond with a wide, flush joint. Roofs are covered with purple and green slates. Windows are metal casements, and trim is painted grayish white. Floors are fireproof with finished wood surface. Interior walls are sand finished plaster over metal lath and painted. Trim and floors of Ohia wood from Hawaiian Islands. Heating by hot water, indirect for first floor. Built during 1915 and cost approximately $38,000 including terraces.



DETAIL OF ENTRANCE PORCH

HOUSE FOR MRS. NORTHRUP CASTLE, NEW ROCHELLE, N. Y.

FRANK A. COLBY, ARCHITECT

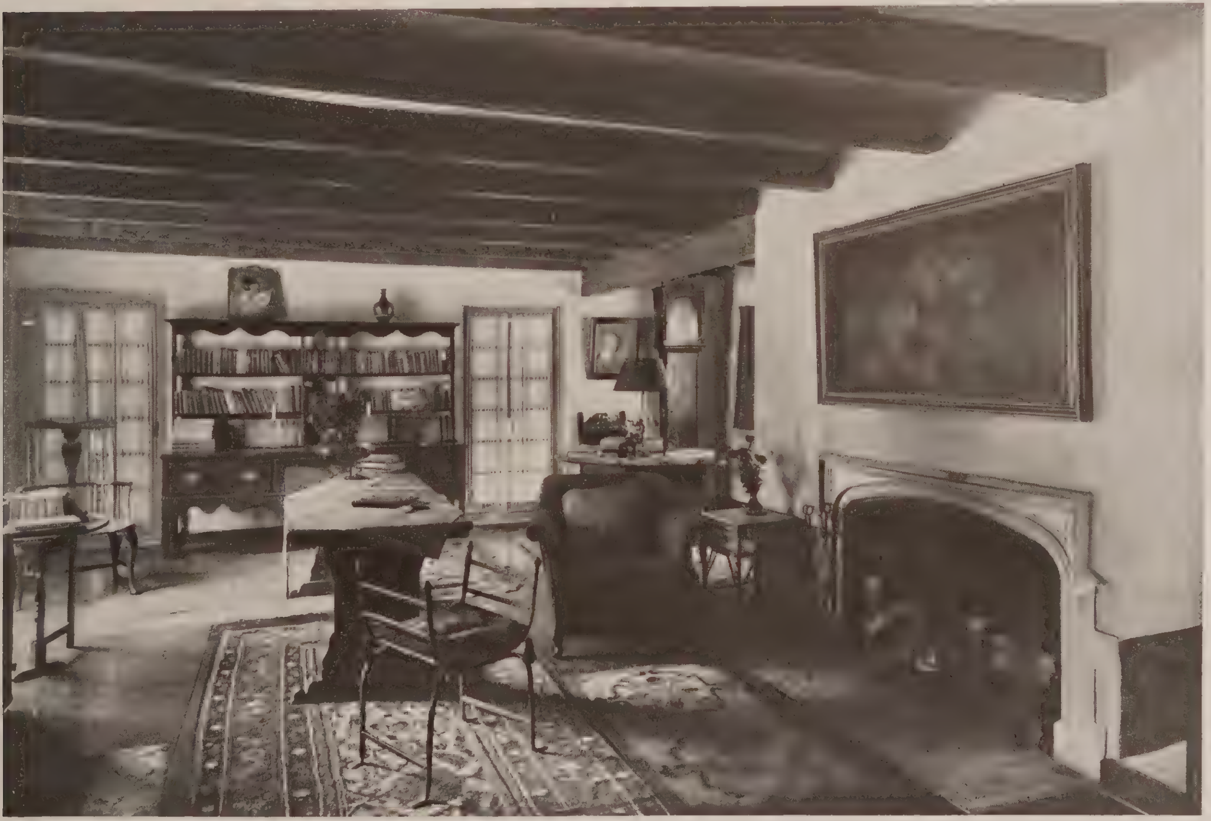
Interior Architecture of the House of Medium Cost

By HOWARD MAJOR

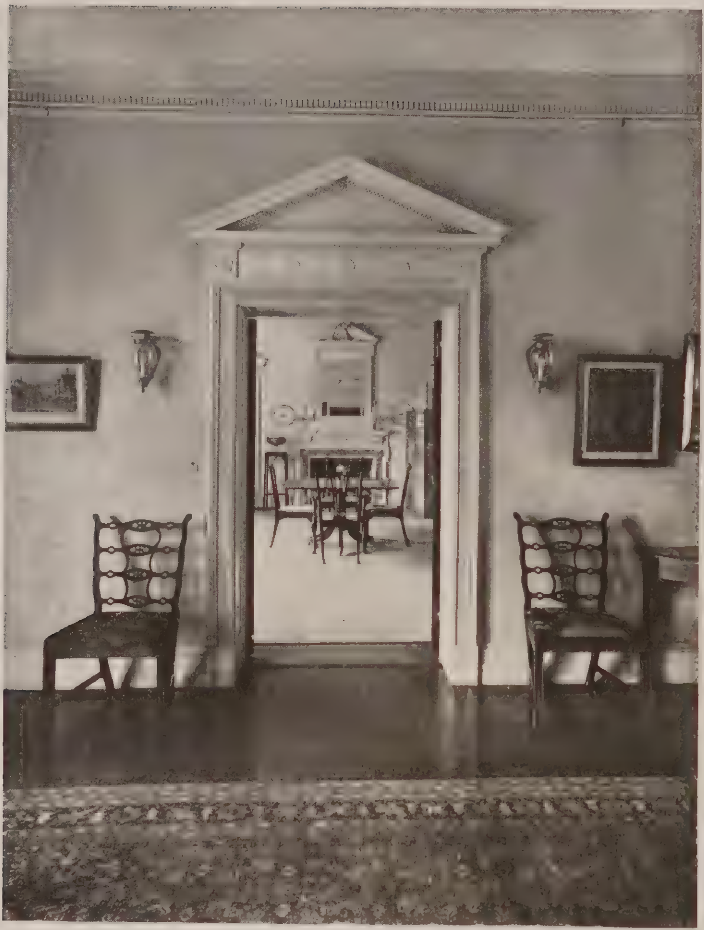
THE architect entrusted with designing a house to cost in the neighborhood of $50,000 is apt upon first thought to believe that period and style in the interior will necessarily have to be abandoned. We realize that with the high cost of building all thought of wainscots and other decorative luxuries must be discarded. However, in previous centuries homes were built from what corresponded in size to $50,000 outlays today. Naturally they were "in period." Why not look to them for simple inspiration rather than to Davanzati Palaces? Unfortunately, architectural libraries invariably contain illustrations of only the important and monumental examples of a period and completely pass over the smaller houses, and this is particularly true of the interior. Colonial architectural works are the only exception to this custom, and it is due to our appreciation of the small house that such work has been faithfully reproduced by measured drawings and photographs.

With the moderate-priced house and with a sane client (sane enough to realize that an architect knows a little more about his profession than his client does) it is a simple matter to introduce period and style in the interior without materially increasing the cost. Two factors are necessary for the consideration of the designer: first study, and second, taste. Every period has its characteristics, a self-evident statement, but judging from some modern work in the way of period rooms, a statement little understood. The average conception of the room of this sort is the design or selection of the chimneypiece, with other features unconsidered. Certainly the chimneypiece is an important element, but by no means the only one of importance. First, the characteristic proportions of the rooms of a period should be studied and these proportions introduced in the modern room; next, the characteristic arrangement, proportions and design of windows, chimneypieces and doors should be considered. Then the architect can safely design the trim and cornice and other details, and with proper fabrics, furniture and arrangement the rooms may have as much true period character and charm as in the house costing half a million—for it is not only the wealthy who may have artistic results.

For concrete examples let us consider first the Tudor period. The exterior is a low, rambling brick



Living Room in House at Pelham Manor, N. Y.
W. H. Orchard, Architect and Owner
A fine example of an inexpensive early English room, informally planned with simple Tudor arched fireplace and beamed ceiling



Hall in House of Herman Kinnicut, Esq., Far Hills, N. J.
Cross & Cross, Architects
A simple architectural background with style. The formality of chairs and side lights creates a relation between architecture and furnishings

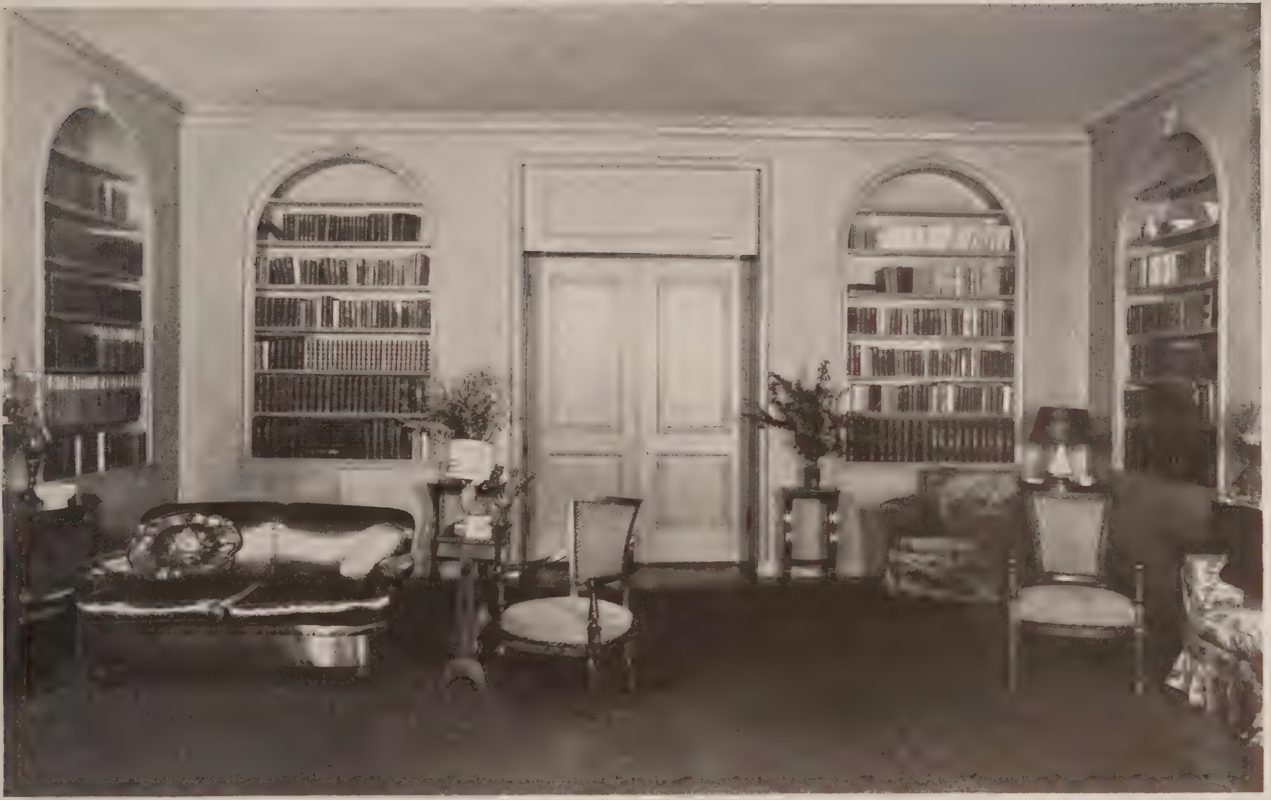
structure with prominent roofs and chimneys, and with the invariably grouped, leaded casement windows. Informality and masculine sturdiness are the predominant effects of the interiors; long and low-studded are the proportions of the rooms; pleasing informality of arrangement is seen in windows, doors and chimneypieces. The doors are narrow and low; the chimneypiece is prominent and of stone. The ceilings are most frequently beamed, and the Tudor arch is often in evidence. All these features may be readily adapted. Our structural joist may be 6 x 8 inches instead of 2 x 12, and left exposed without increasing the cost. The walls may be of rough-cast plaster and the chimneypiece may be inexpensive, of cast cement with an arched opening and without shelf or other features. The windows have been designed on the exterior to be in harmony with the interior. The staircase is the most important decorative feature of the interior. Careful consideration is necessary to determine its arrangement and design. These early staircases are of a solid, massive character with the newels prominent and accentuated. The strings are invariably closed with heavy, turned balusters closely spaced. The whole staircase, like the ceiling, is stained dark brown. For these features oak is preferable, but chestnut is less expensive and a fair substitute. With proper color and furnishings a good Tudor period interior is obtained without unduly increasing the cost.

Another English period of radical contrasts to that just considered is of the latter half of the eighteenth century. The exterior is now a formal, stately type of brick house with double-hung windows carefully proportioned and spaced upon the facade, and equally carefully spaced and proportioned within. Formality, delicacy and classicism are at once the predominant characteristics of the interior. The rooms of stately proportions have developed considerably higher ceilings. Particular attention was devoted to the doorway, which is high and still narrow. If an important door came at the end of the wall it was frequently balanced by a false door at the opposite end. If it were an unimportant door the eighteenth century designer had no qualms in making it a blind door. The windows and chimneypiece are equally formal in their disposition. A small classic cornice and dado are introduced upon smooth plastered walls. A small marble chimneypiece of simple, classic design was featured upon a breast of very small projection. By the use of marbleizing a wood mantel of good design often produces the effect of costly marble.

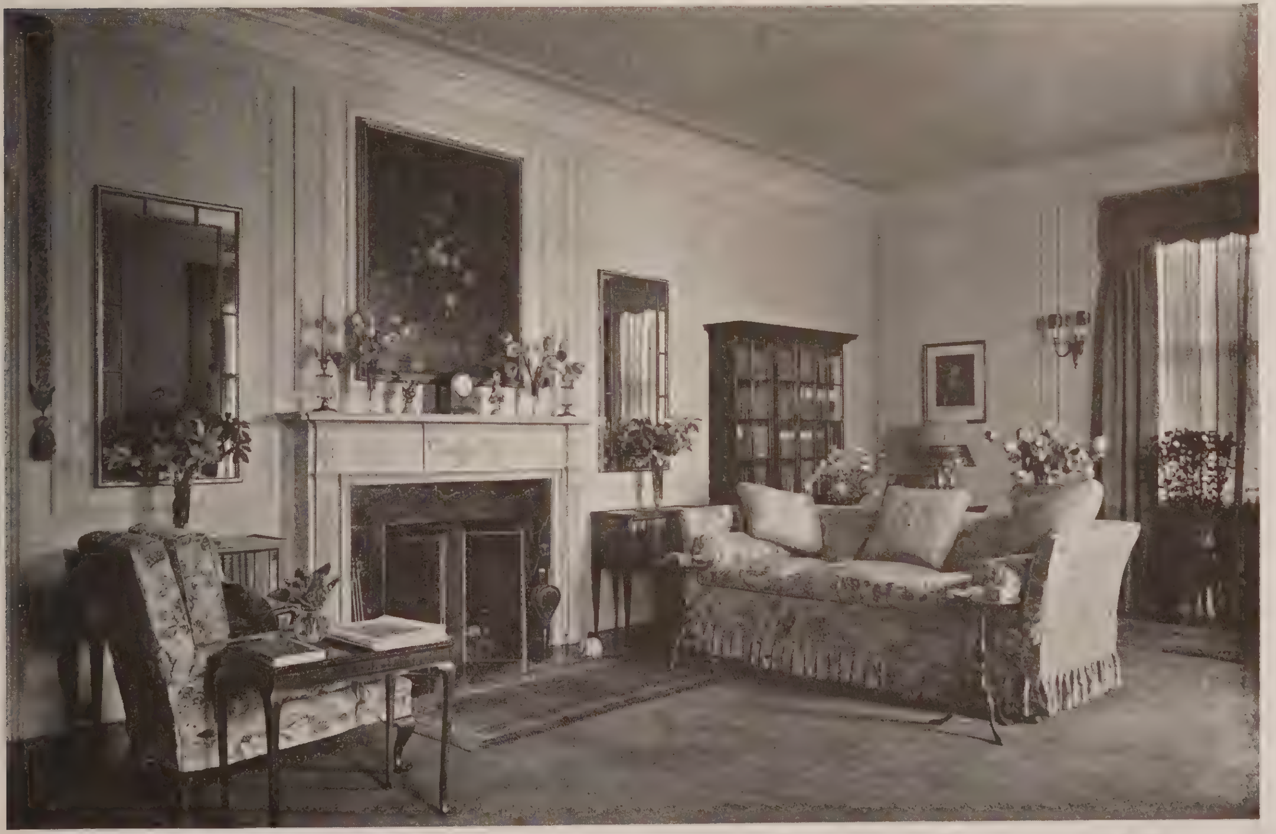
The staircase was still an important feature of design. Lightness had been procured by the introduction of the open string. Continuity of design had been attained by the complete subordination of the newel and by the introduction of ramps and easements. The attenuated balusters were widely spaced and supported a very small, delicately moulded handrail. Often the graceful curved or circular staircase was resorted to, producing rhythmical, flowing lines to the floor above. Again with proper color and furnishings a good period room of widely different character is produced, still within the possibilities of our restricted cost.

So we can analyze any particular period and determine its spirit and characteristics, and eliminate features which are unduly expensive. The result of such research will be the knowledge that every period is adaptable to the house of moderate cost, providing, of course, the exterior is in harmony with the interior.

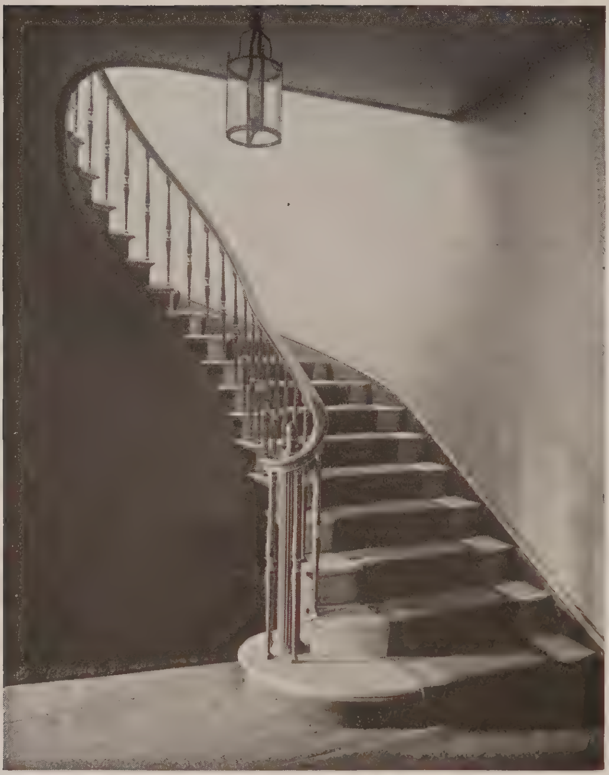
The interior has its pitfalls for the designer. There is the pernicious practice of making interior detail of a scale suitable for exterior architecture. Keep interior detail small; it is far less a fault erring towards the small than otherwise. Large scale of detail with the help of heavy stuffed chairs and davenports has killed the sizes of more houses than limited purses. A good rule for the young architect would be to design his detail as he believes proper, and then reduce it 25 or 50 per cent. Another frequent error is the height, or rather lack of height, of windows. In work



LIBRARY, HOUSE OF MRS. IRVING BROKAW, NEW YORK
MRS. EMOTT BUEL, DECORATOR
Plaster walls and trim painted soft green; plum color in carpet and upholstery



LIVING ROOM, HOUSE OF MRS. JAMES McCREA, NEW YORK
MRS. EMOTT BUEL, DECORATOR
A simple room of eighteenth century character in which mulberry and yellow are the dominating tones of the furnishings against cream walls



Staircase, House of Norman Toege, Esq., Locust Valley, N. Y.
Howard Major, Architect

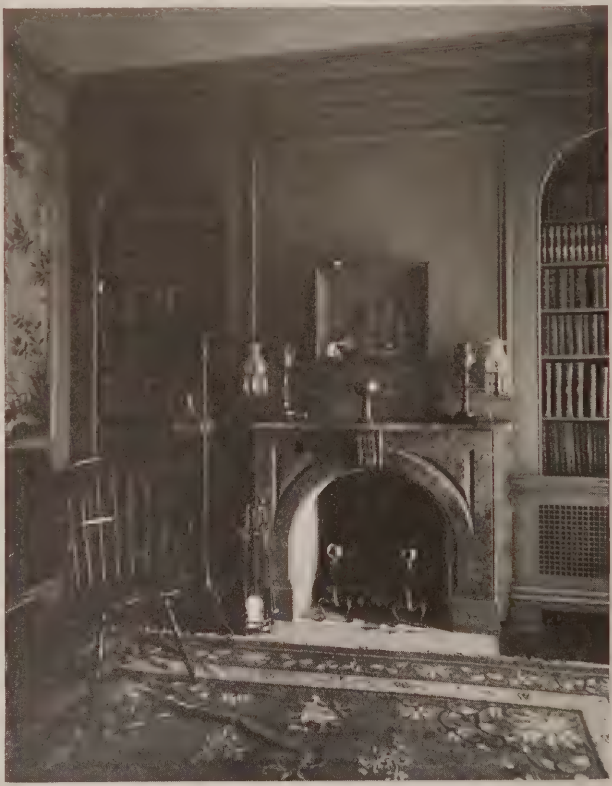
An inexpensive but striking staircase of late eighteenth century. Color, freely used on the stair rail, is relieved by simplicity of enclosing walls

of eighteenth century type, dignity should be obtained by giving the windows their maximum height. A high window in this character of room is one of its important decorative features. I have known draftsmen to go out of their way to have the door and window heads line up. On the contrary, avoid having their heads at the same height, so as to have the window height predominate. It is not good practice to place closely windows or doors either side of the chimneypiece, since daylight directly in the eyes of the group around the fire is uncomfortable, and passing this group is disturbing. If the openings are sufficiently away from the breast this objection is, of course, not valid. A deep breast projecting into the room is also a bad feature, since the pockets at each side are worthless space and ugly, and the sitting group about the fireplace does not comfortably compose with it. It is better practice, if this condition exists, to fur out for a small breast and either throw the space away or utilize it for bookcases or cupboards.

There is a tendency to place either one or three windows on the outside wall of a room. If the wall is over 30 feet long three windows are successful, but if less they occupy too much wall space and are unnecessary. In the average sized room two windows are generally better than one or three. A critic will undoubtedly take exception to this and reply that a dual composition is bad. Quite true, a dual composition of two windows on a wall is bad, but it is only a dual composition while the room is unfurnished. Domestic architecture differs from other architecture in that the architect is compelled constantly to bear in mind interior furnishings while planning and designing. *This is the keynote of successful domestic architecture.* With a dual composition of windows with good space between, a cabinet or commode with a painting above would be introduced. The furnishings then change a bad composition of two equal elements to a good composition of three parts with the center part predominating.

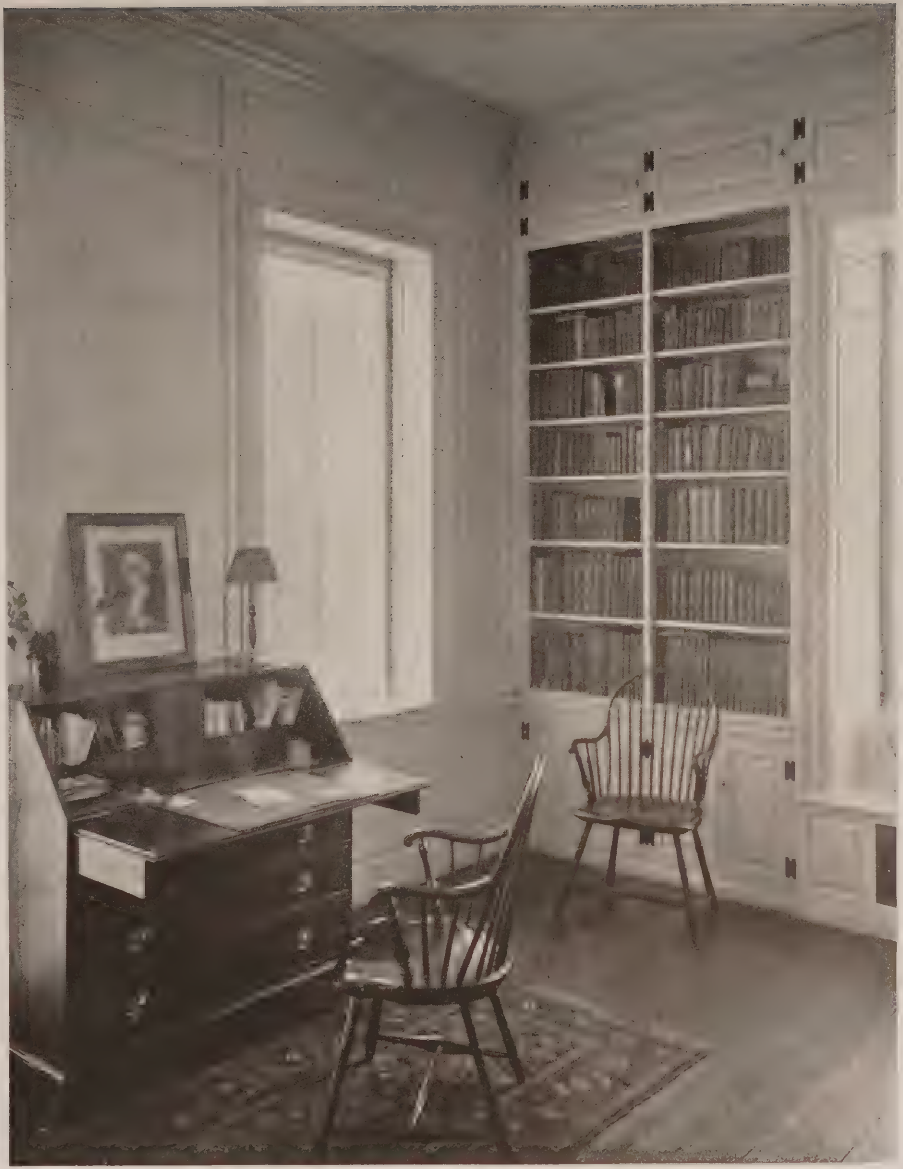
Never resort to the expedient of using one room as a means of access to another, for it is impossible to create a feeling of comfort in a room used as a passage. Do not use glass in interior doors. A door has a purpose, and a glass door is a good deal like the proverbial glass house.

Very few are capable of judging architecture, whereas most people have an intuitive appreciation of a well decorated interior. The judgment is not analytical, however, and a badly decorated room is synonymous with bad interior architecture, notwithstanding, to the contrary, how praiseworthy the architecture may be. Architectural interiors are judged by the success or failure of the interior decorations. Hence, irrespective of financial profit, it is to the architect's interest to carry through these interior decorations. Strange to say, our architectural societies seem to frown on this practice or to acquiesce under conditions not financially possible to the architect—or ethically possible to the manufacturer.



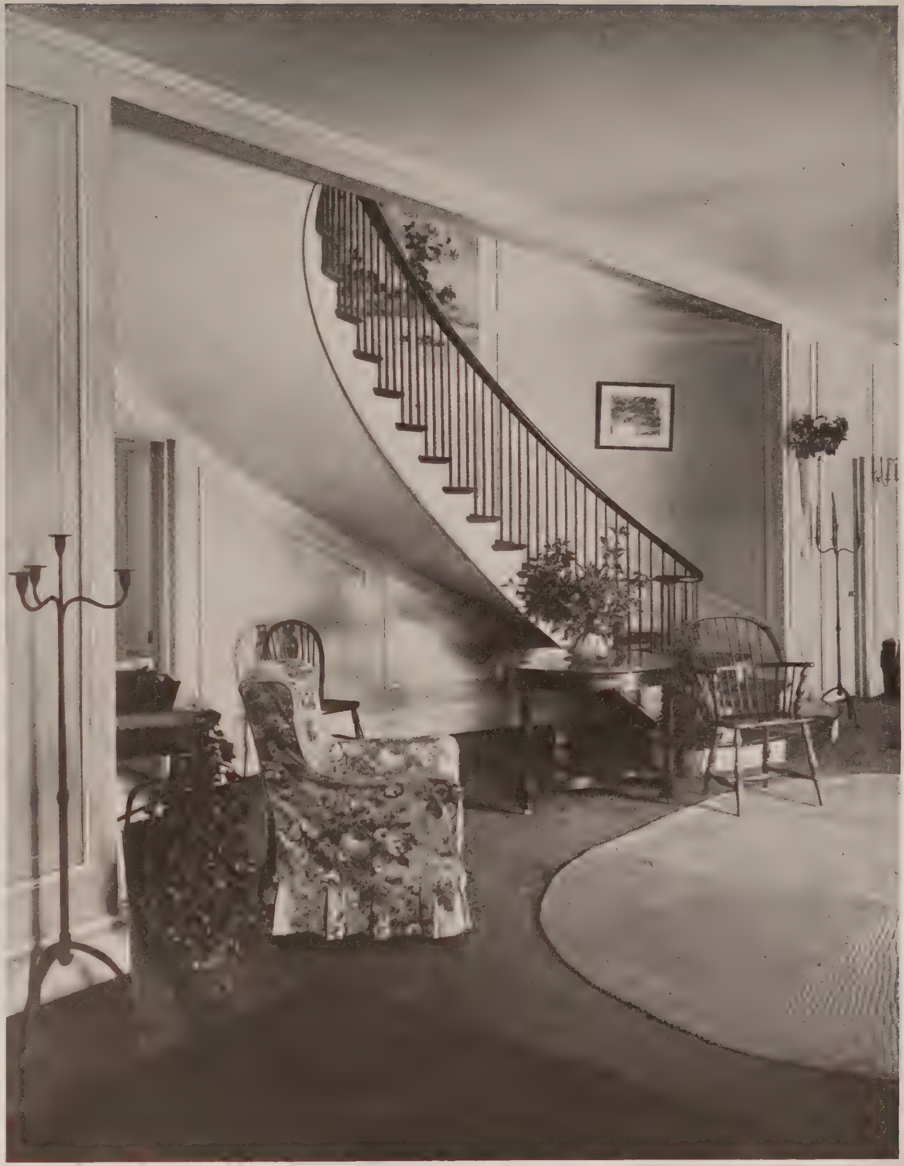
Library in House on Long Island, N. Y.
Howard Major, Architect

Inexpensive architectural background of early Victorian period. Wood mouldings on plaster walls enclosing scenic paper. Rose colored marble mantel from old house on property



LIBRARY, HOUSE OF I. WISTAR MORRIS, ESQ., CHESTNUT HILL, PA.
R. BROGNARD OKIE, ARCHITECT

A good example of wood paneling in early eighteenth century manner. The bookcase and radiator enclosures are well contrived



STAIRWAY, HOUSE OF ALONZO POTTER, ESQ., SMITHTOWN, N. J.
PEABODY, WILSON & BROWN, ARCHITECTS

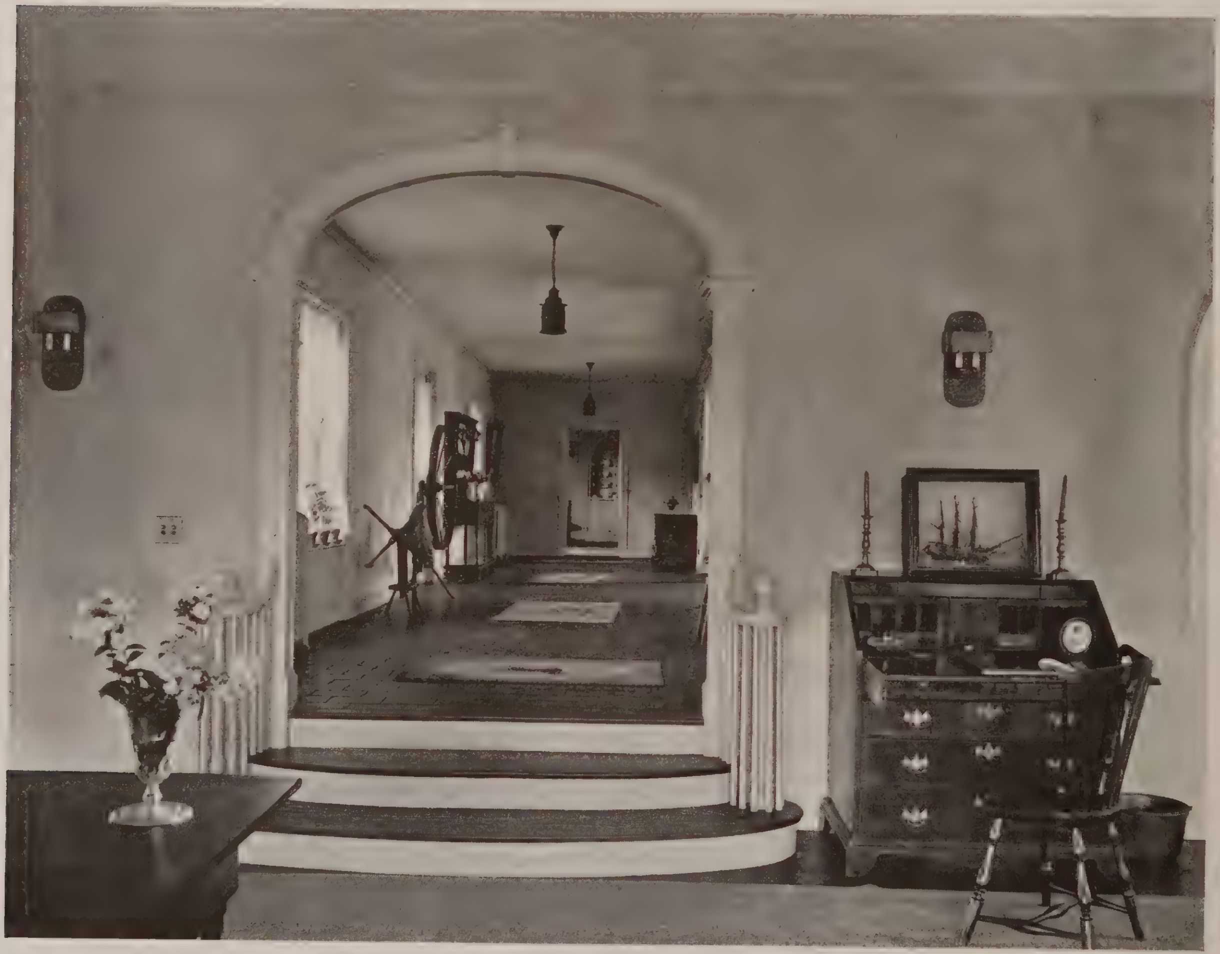
A fine example of a simple elliptical staircase. Its decorative quality is impaired by placing furniture in the line of approach

A practical method to pursue is to establish a separate department or business to conduct the decorating. This department buys wholesale and sells to the client retail. This method, in complete contradiction to the professional practice, is run separately and is so explained to the client. The client pays no more to the architect or decorator than would be paid to the retail house—and has in addition professional service. The architect who charges 15 or even 20 per cent over costs will find that what the client considers an exorbitant charge will not pay him for the work involved, and it is doubtful if he would attempt such work a second time.

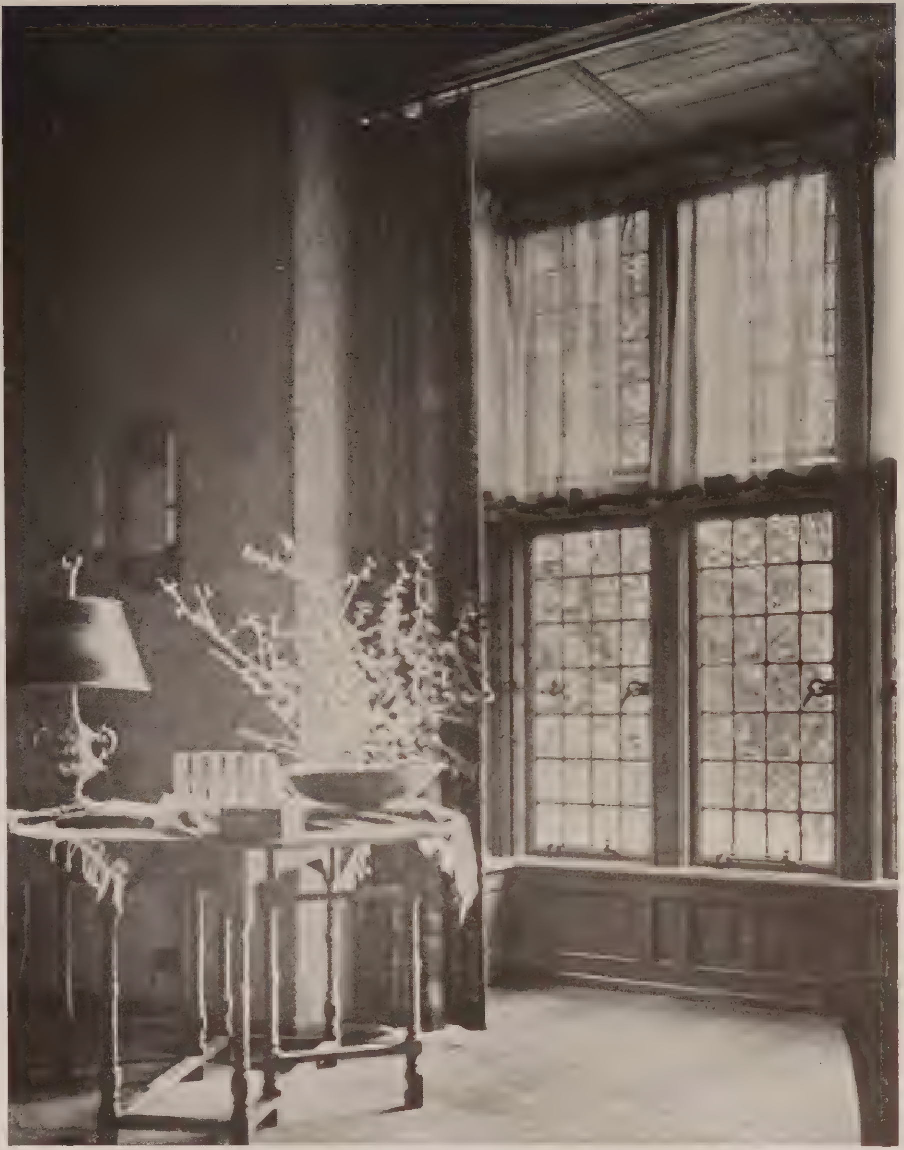
With the interior designed, the wall treatment or color and the fabrics are next to be considered. With sixteenth or seventeenth century rooms the natural gray of rough-coated plaster will often suffice, and with a light glaze these rough surfaces may be successfully antiqued and the effect enhanced. With the smooth, white coated plaster surfaces used up to the end of the eighteenth century paint will be necessarily introduced, with no end of variety of colors antiqued by means of glazes. A glaze is a thin wash of turpentine, wax and color pigment, brushed over a color and partly sponged off and stippled to the taste of the designer. Good painting will last for years and mellows as it ages. On account of expense, fabrics and wainscots cannot be wisely used. In the latter part of the eighteenth and the early nineteenth centuries wall papers and marbleizing were introduced. These open up a wide field for highly interesting and decorative results. Marbleizing of the walls is particularly fascinating and allows great play to the imagination of the designer. It is a dangerous medium, however, excepting for the skilled designer and mechanic. The many scenic papers we are all familiar with produce very striking backgrounds. A less expensive wall paper treatment is that obtained with repeats manufactured by the roll. There are many in the market with fine yellow, red and green backgrounds. They can be used with very interesting results by painting the trim, doors, cornice, base and dado the background color of the paper. The entire room, including the paper, is then varnished, and glazed to an antique effect. Some of the *Chinois* designs are very happy so treated.

In the market today are many very decorative and well designed glazed chintzes which are inexpensive and in correct character for our moderate cost houses. These stiff chintzes used as hangings give a most quaint effect.

Striking results may be obtained by painting the



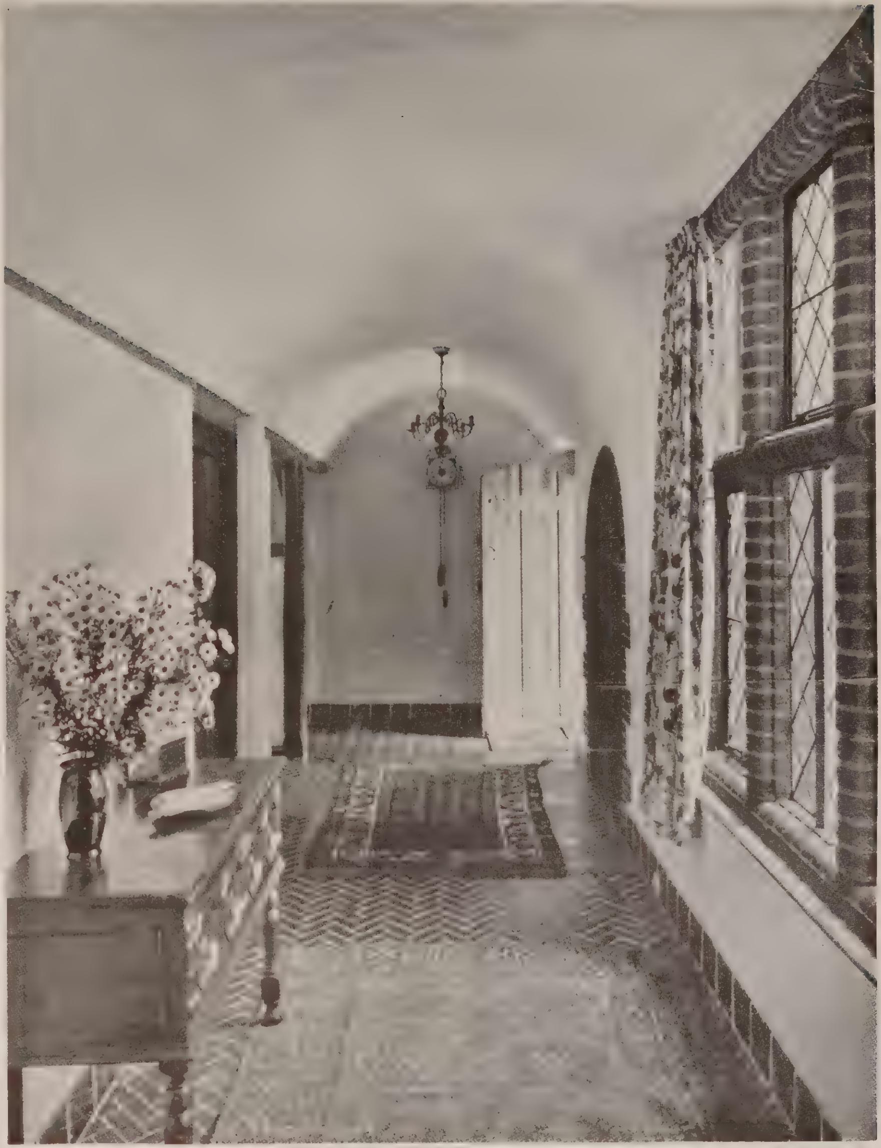
View of Hall from Living Room, House of Reeve Schley, Esq., Far Hills, N. J.
Peabody, Wilson & Brown, Architects
Simplicity and restraint do much to give this house the character of a real colonial home, and the result is most satisfactory



LIVING ROOM, HOUSE OF W. R. FLINT, ESQ., PASADENA, CALIF.

JOHNSON, KAUFMANN & COATE, ARCHITECTS

Hollow structural concrete walls show inside, surfaces painted and glazed; woodwork Oregon pine, antiqued



HALL IN MODERN ENGLISH SMALL HOUSE

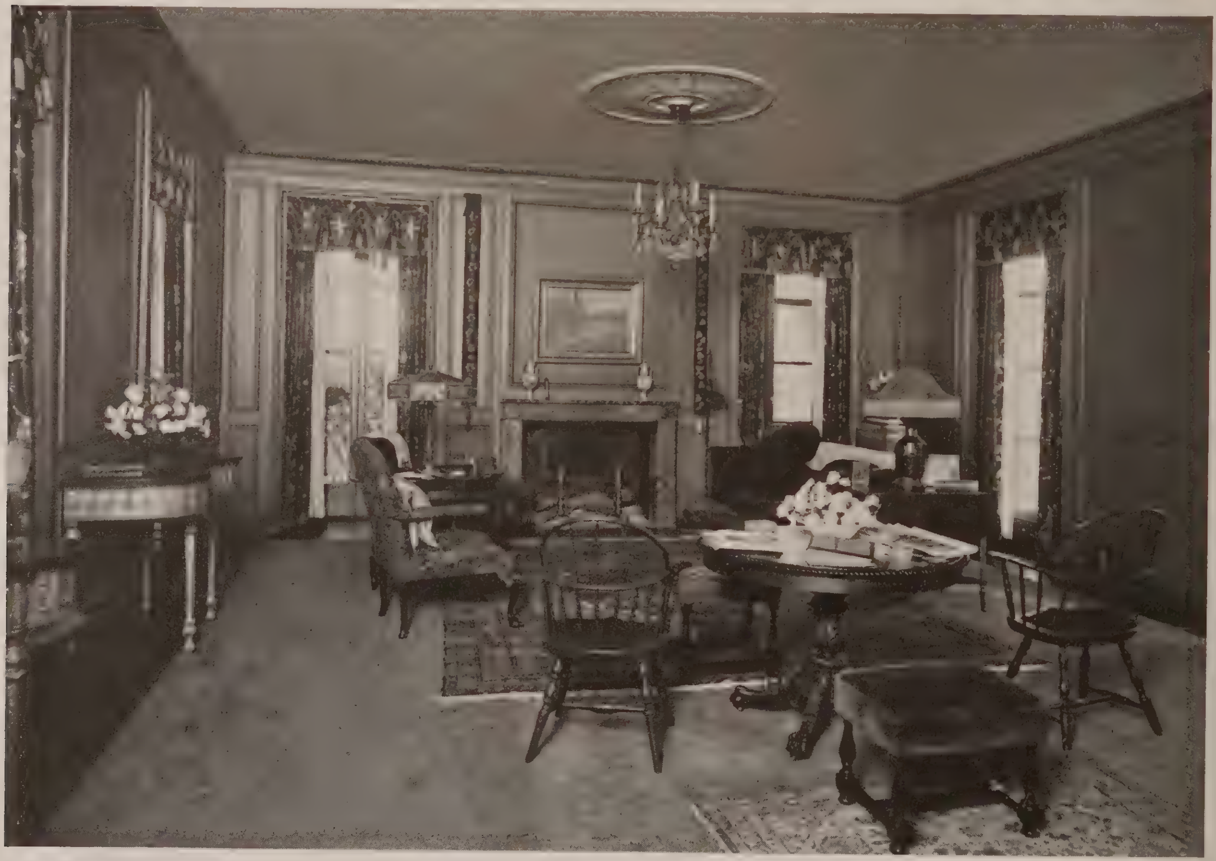
G. BLAIR IMRIE, ARCHITECT

Interesting combination of natural gray plaster, oak trim, vitrified brick floor, metal casements and brick mullions floors. For instance, blue-gray walls with a red lacquer floor with gray rug, or gray-tan walls with a deep blue floor, produce at once strong individuality. In halls I believe the black and white squares of rubber composition in imitation of marble laid over a rough flooring will not be beyond the purse of the owner. These imitations are excellent, and when the cost of finished flooring and carpets is deducted, the result will not be prohibitive.

The architect all too hurriedly places his lighting outlets and radiators upon his plans. At night the lighting is the first consideration in the room since because of its nature each light demands the attention of the eye. It is therefore a subject which requires most careful consideration. The center ceiling light in the important rooms upon the first floor is most decorative. It is true it is not always intended to be used excepting in an emergency, such as a dance, musicale, or some other large gathering where necessarily the furniture is disarranged. The happy use of crystal combined with delicate metalwork for the chandelier produces a lightness and playfulness as a decorative feature hard to surpass. In the living room wall brackets are not necessary, but a liberal number of base receptacles should be advantageously spaced about the room. These base receptacles should be controlled by a switch at the entrance of the room. The lamps may then be freely placed so that the lighting is fairly uniform, but accentuated about the fireplace where there should be the predominant group of furniture.

The lighting requires careful consideration because of its important decorative quality, whereas the radiator requires the same consideration because of its unsightliness. The problem is solved if the radiator is enclosed, but enclosed in the architecture of the room. A box covering a radiator placed against the wall is in my mind as bad as the radiator left exposed, if not worse. A box projecting under a window is considerably better, as it forms a composition with the window, but it is detrimental to the hangings. This can be obviated by furring the outside wall until it clears the radiator. In this case the radiator painted the same color as the wall, and with the aid of the over-curtains to the floor, becomes so inconspicuous that it is not necessary to enclose it.

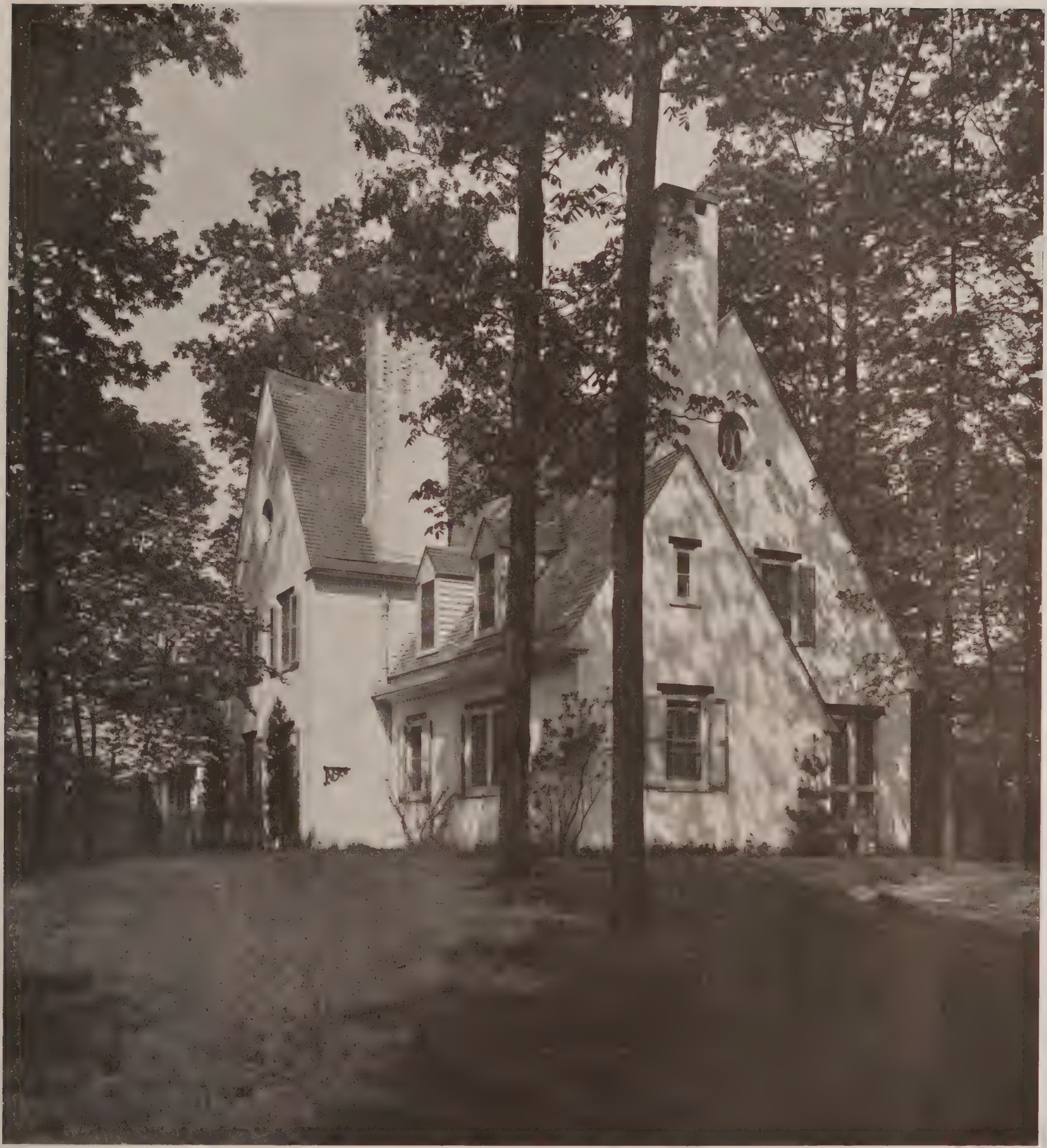
A word would not be amiss here on the treatment of the baths and the service end of the house. I believe the day has passed for the conventional white tile treatment of bathrooms. They can be made far more pleasing with varnish and glazed wall papers or with varnished marbleizing. Why not have some color here, particularly when labor on tiling is of such exorbitant cost? For the floor, colored terrazzo is striking and not costly. In the kitchen and pantry all woodwork can be successfully painted a deep color and varnished. The contrast to the light walls is interesting and wears far better than white.



Living Room in House on Long Island, N. Y.

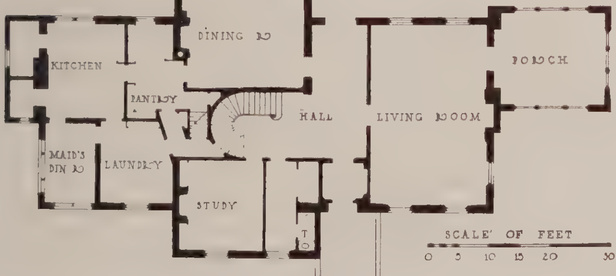
Howard Major, Architect

A rich but inexpensive architectural background of the early eighteenth century. Simple plaster cove cornice, wood panel mouldings on plaster walls. Glazed chintz curtains with two colors of the chintz picking out the panel moulds

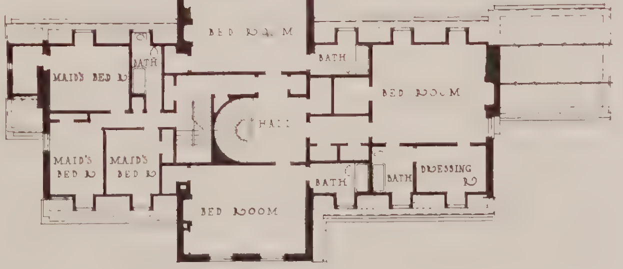


Photos by John Wallace Gillies

VIEW OF SERVICE END



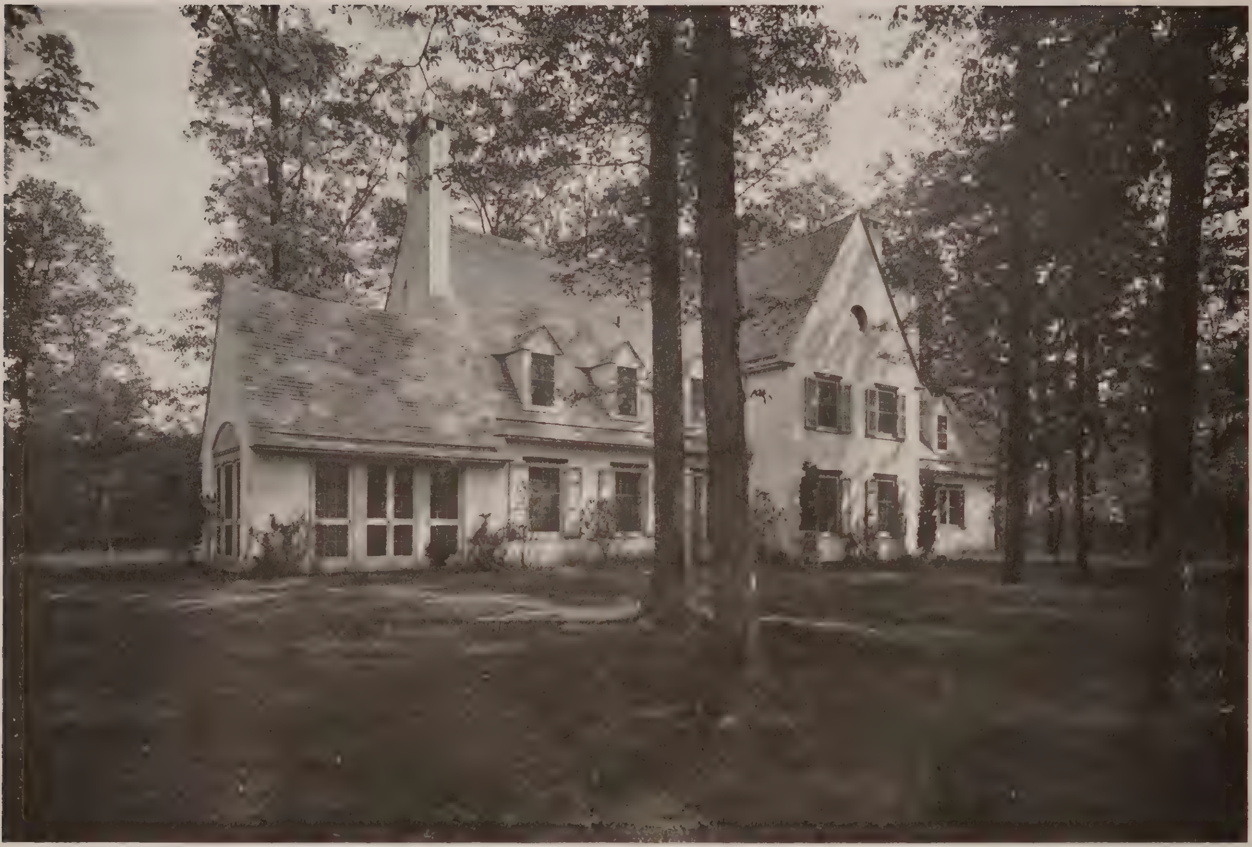
FIRST FLOOR PLAN



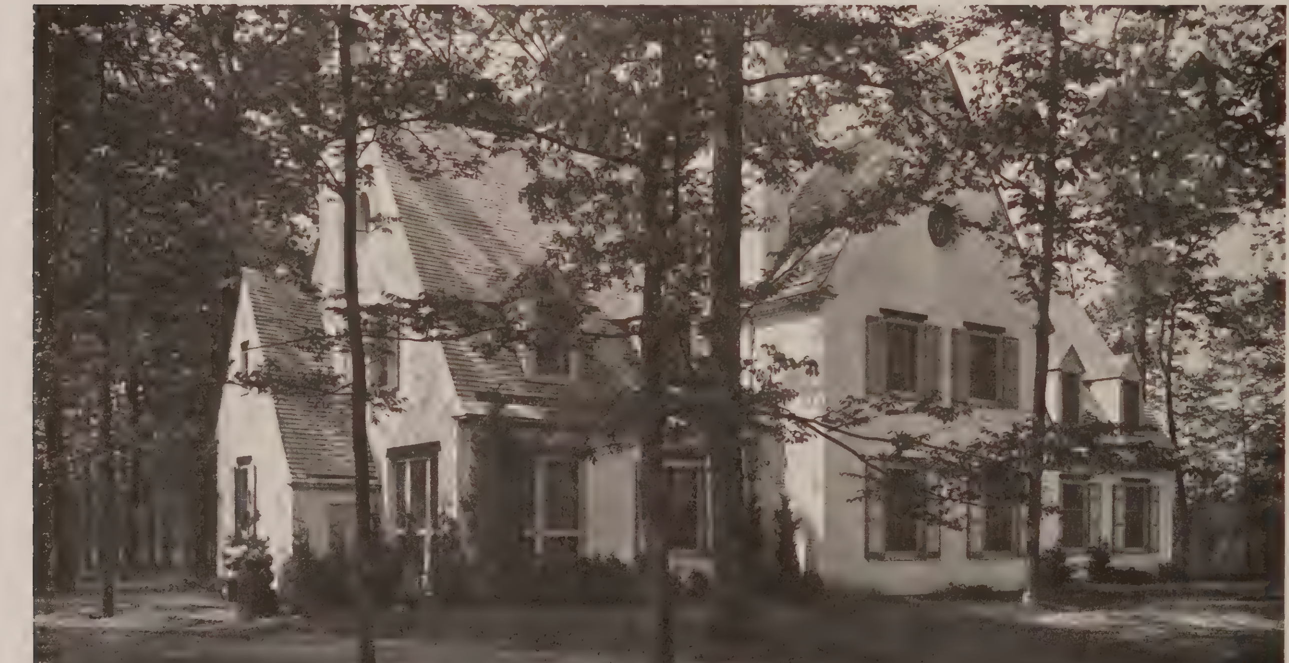
SECOND FLOOR PLAN

HOUSE OF NORMAN TOEGE, ESQ., LOCUST VALLEY, N.Y.

HOWARD MAJOR, ARCHITECT



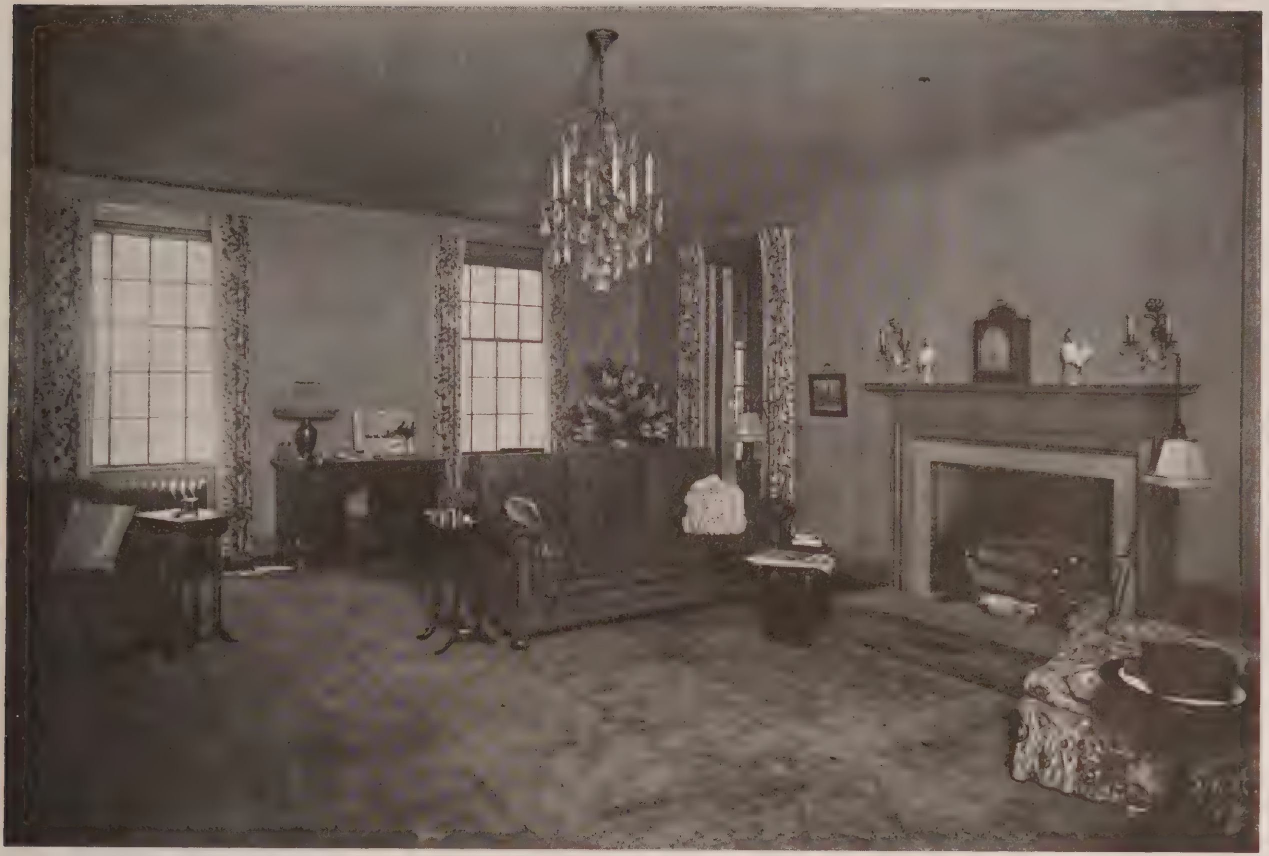
GARDEN FRONT



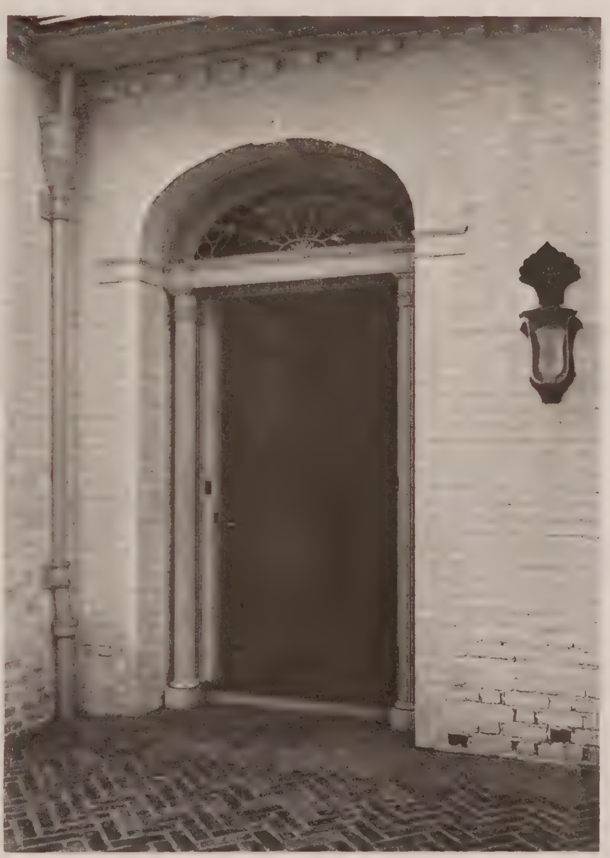
ENTRANCE FRONT

HOUSE OF NORMAN TOEGE, ESQ., LOCUST VALLEY, N. Y.

HOWARD MAJOR, ARCHITECT



LIVING ROOM



ENTRANCE DOORWAY

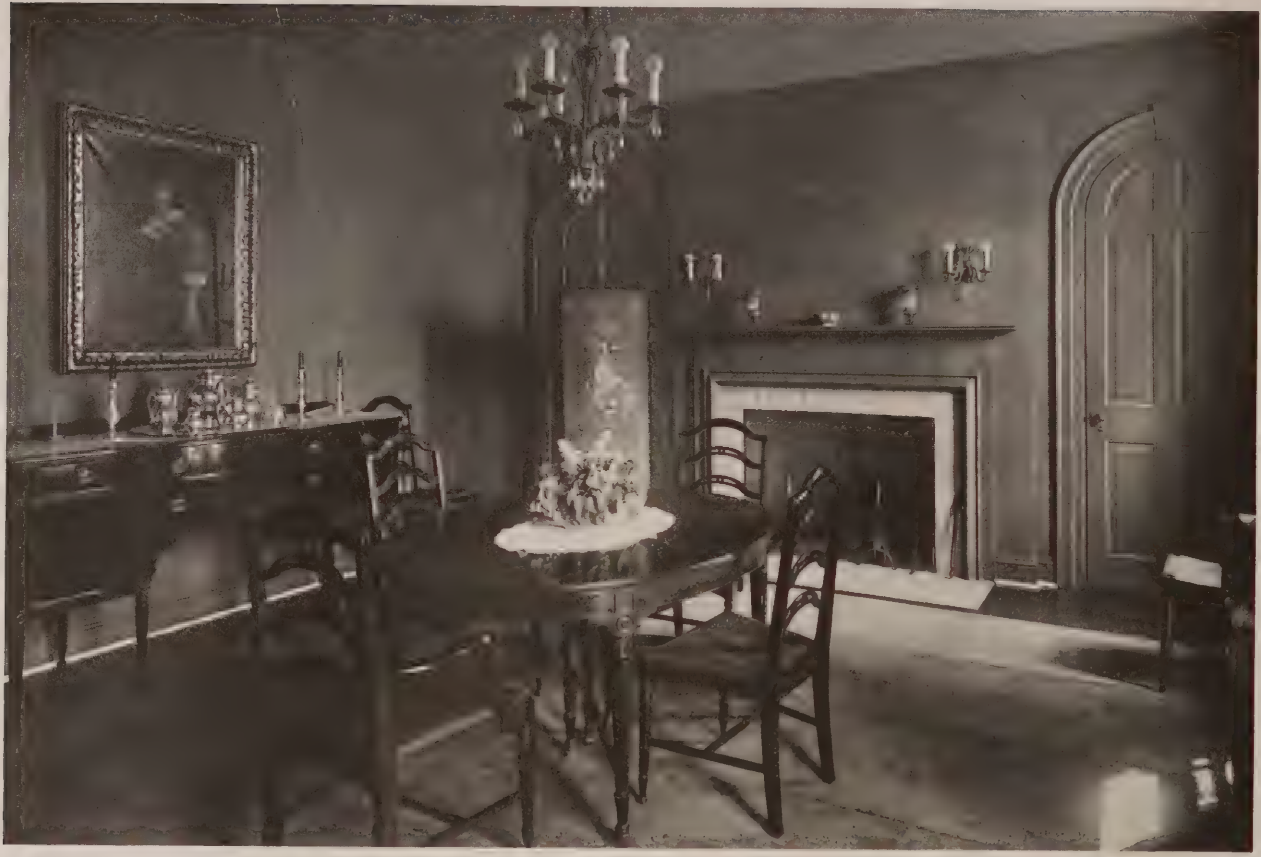
THE striking excellence of this house is due to unusual design, to use of appropriate materials, and to the use of considerable color. Exterior walls are of common brick, whitewashed. Above doors and windows are oak lintels given a dark finish; shingles are used for roofs; the front door is painted blue-green, and rails and stiles of shutters are pale blue. The use of this strong color combination gives the building a highly distinctive appearance.

Bold use of color marks the interior. Walls of living room are painted blue lacquer treated to produce on the surface a network of fine cracks or lines; hangings of figured cretonne with brilliant reds and blues; mantel of red lacquer; floor deep red. A gray rug is used, and the sofa is covered with blue-green damask. The circular stairway has it walls, risers and treads of gray; balusters, handrails and base are blue, and carpet gray. Putty colored walls with green and mauve draperies are used in dining room; floor is a dark mauve and carpet of gray-green, while lighting fitments repeat mauve of window hangings. The brick walls of the living porch are gray-white; floor is of dark gray square tile and shades of brilliantly colored and glazed chintz.

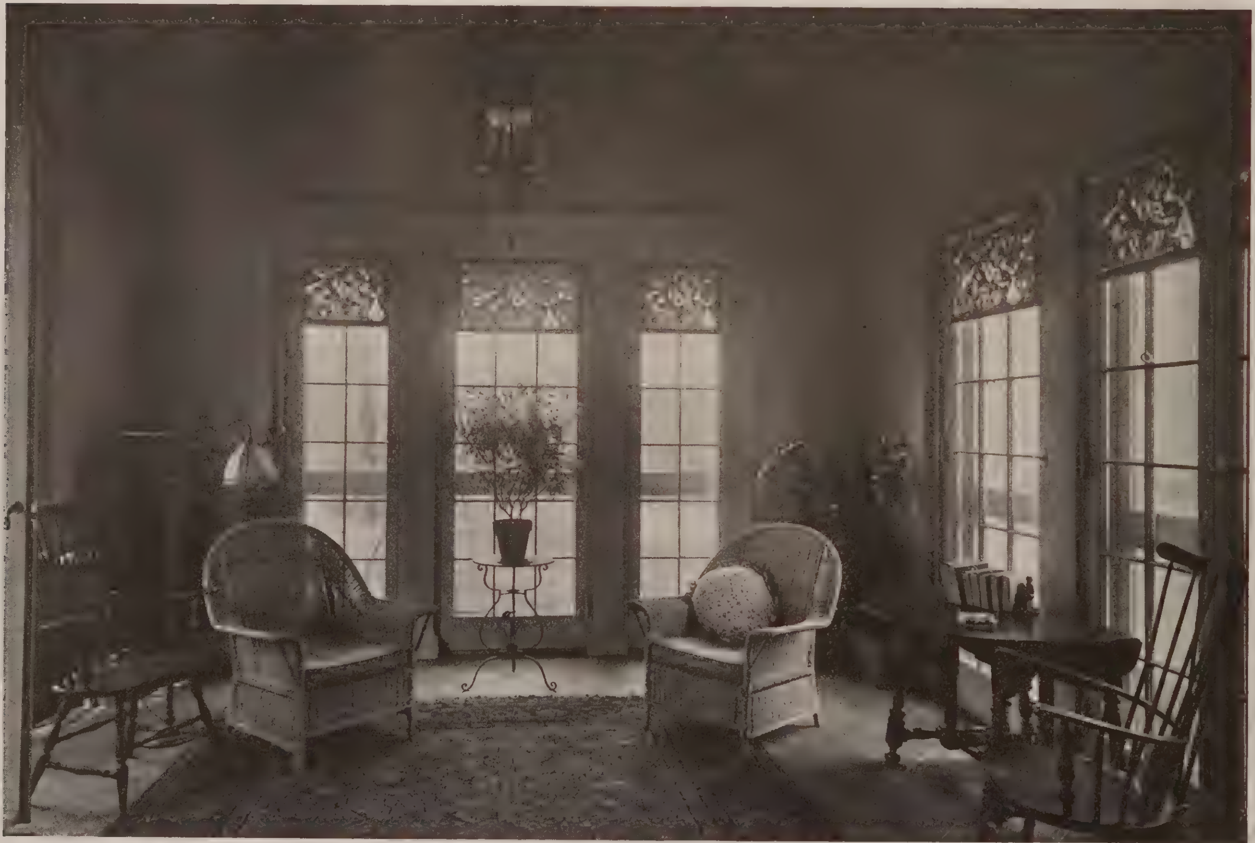
In the den, walls are of deep red lacquer, and floor deep blue-gray to neutralize warmth of the red. Hangings of brilliant blue glazed chintz, the blue repeated in lighting fixtures. Brick fireplace facing white. Contract let in 1920; the cost was $44,285.

HOUSE OF NORMAN TOEGE, ESQ., LOCUST VALLEY, N. Y.

HOWARD MAJOR, ARCHITECT



DINING ROOM



ENCLOSED PORCH

HOUSE OF NORMAN TOEGE, ESQ., LOCUST VALLEY, N. Y.

HOWARD MAJOR, ARCHITECT

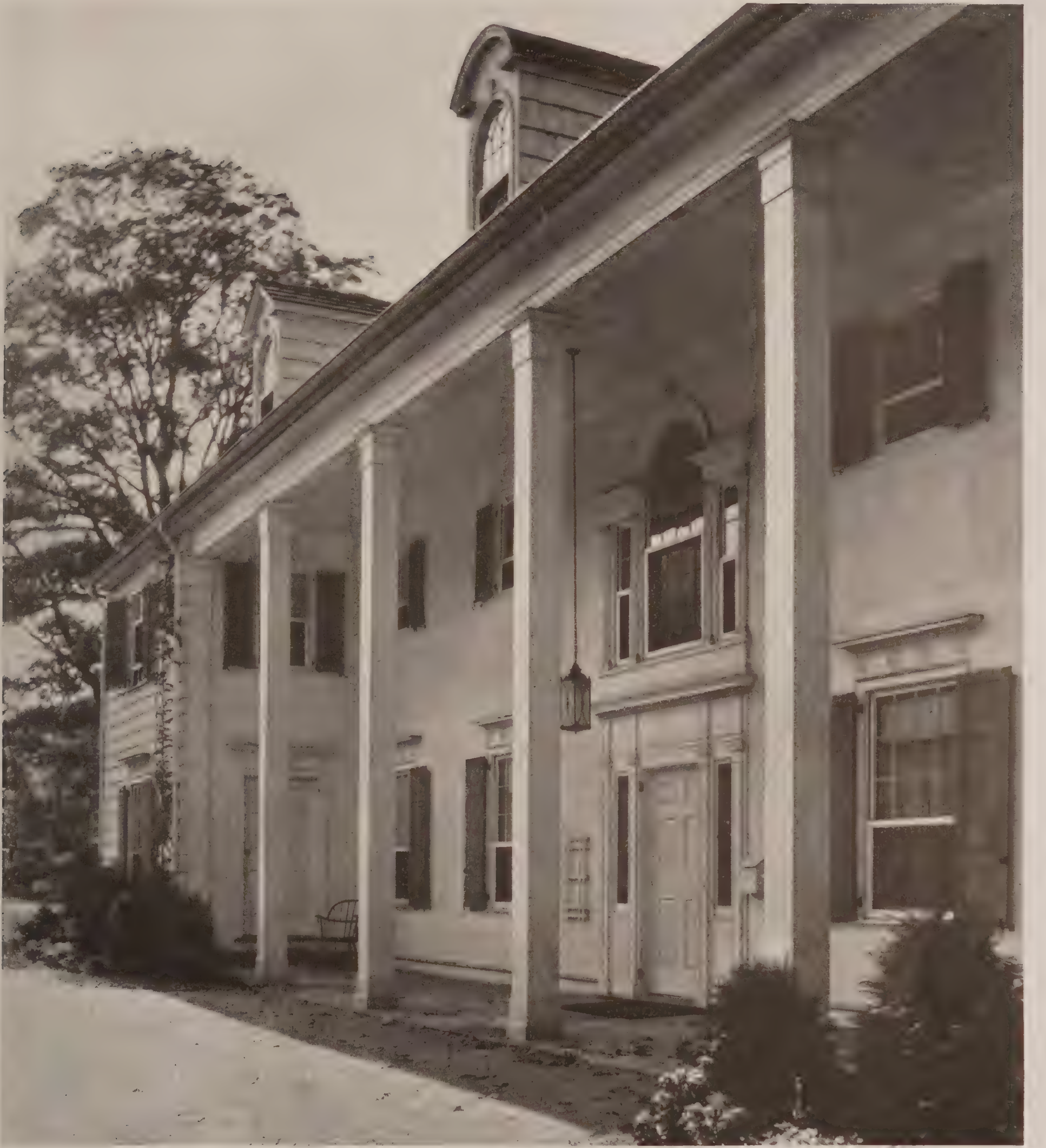
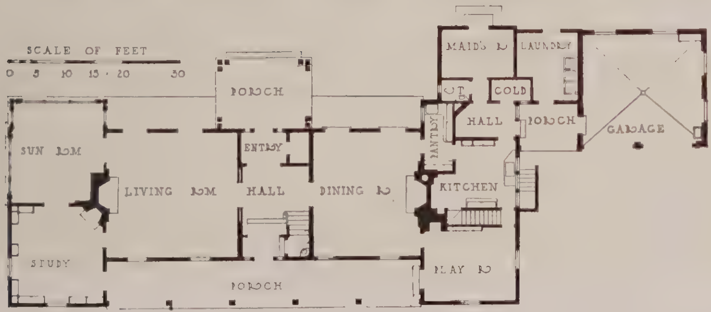
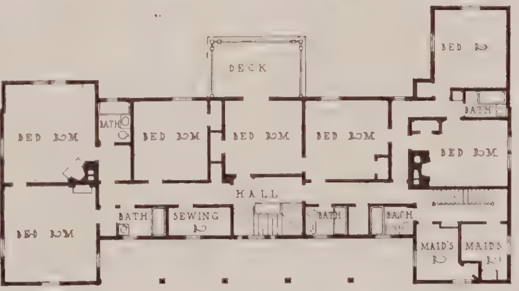


Photo by Paul J. Weber

ENTRANCE LOGGIA



FIRST FLOOR PLAN



SECOND FLOOR PLAN

HOUSE OF FRANCIS BOARDMAN, ESQ., RIVERDALE-ON-HUDSON, N. Y.

DWIGHT JAMES BAUM, ARCHITECT

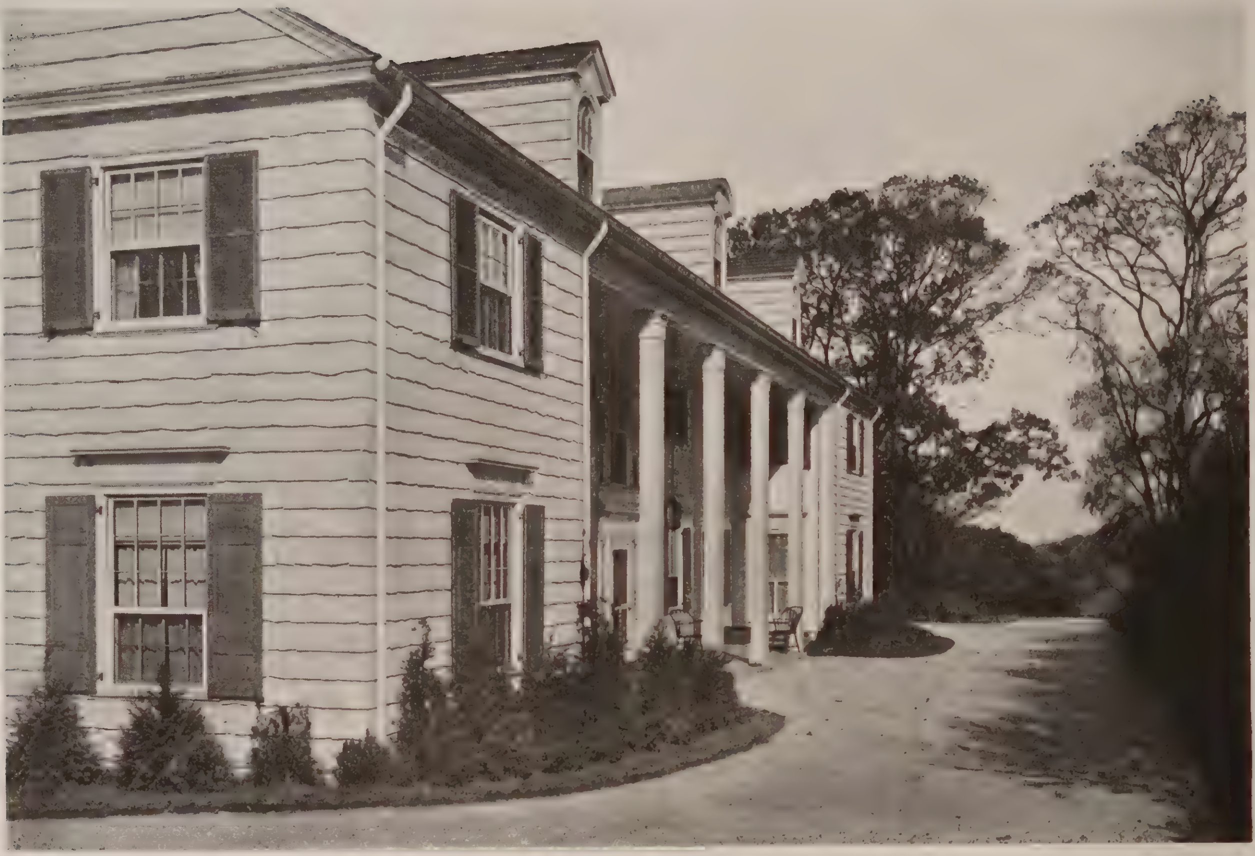


Photo by John Wallace Gillies

ENTRANCE FRONT

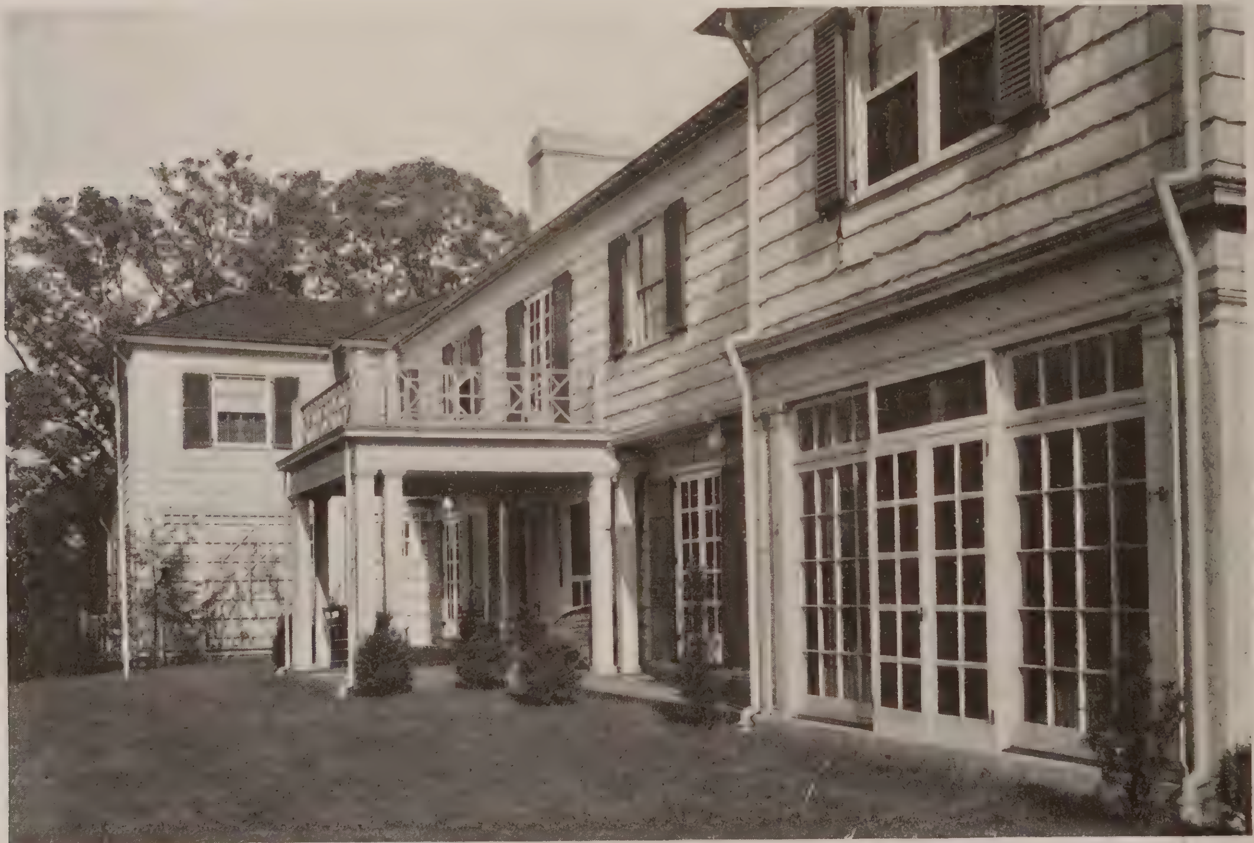
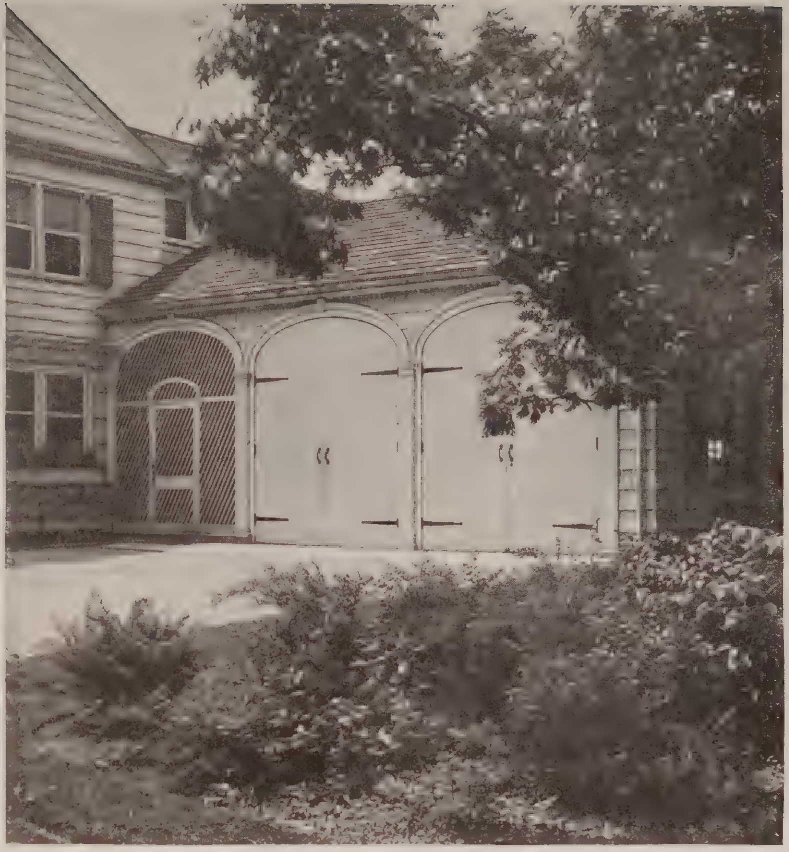


Photo by Paul J. Weber

RIVER FRONT

HOUSE OF FRANCIS BOARDMAN, ESQ., RIVERDALE-ON-HUDSON, N. Y.

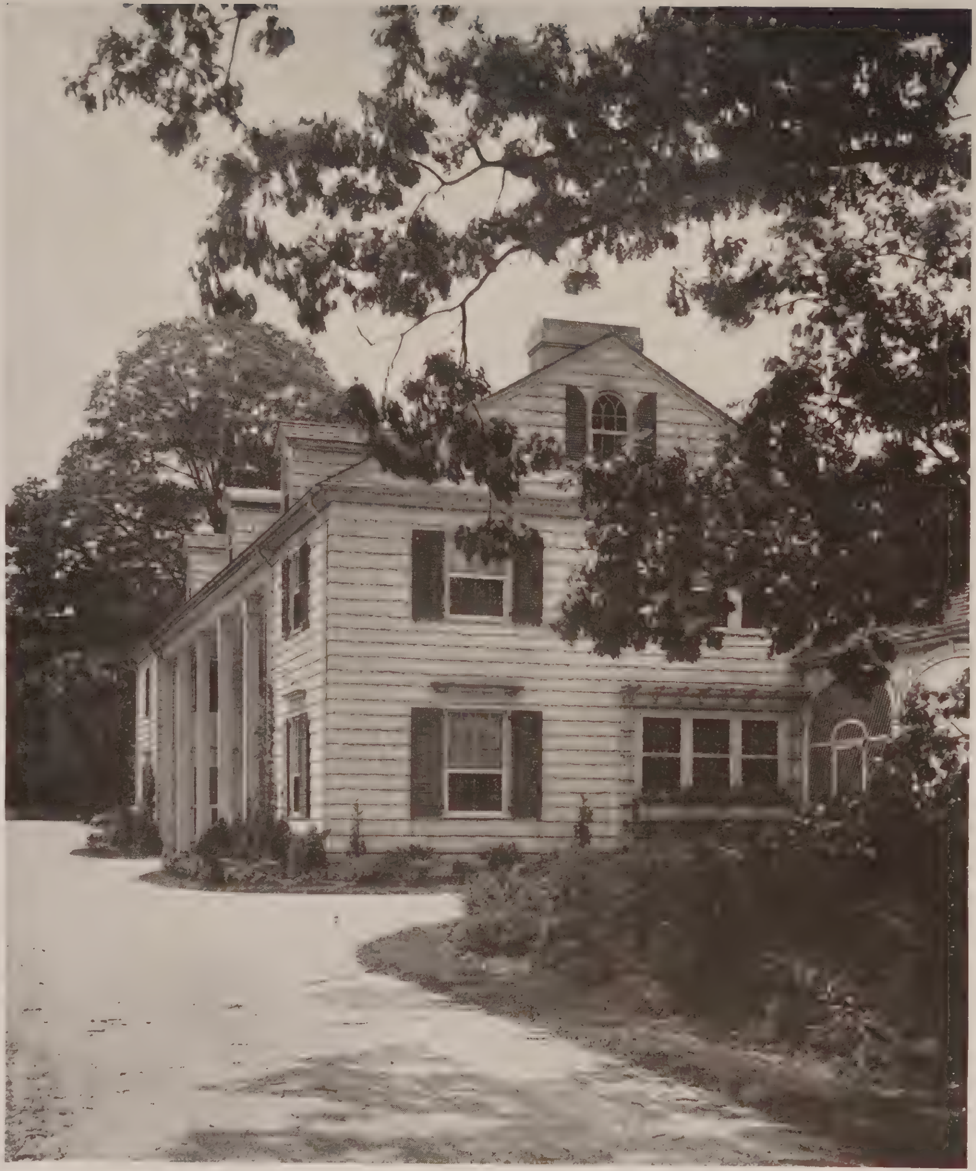
DWIGHT JAMES BAUM, ARCHITECT



GARAGE WING

ON a hill overlooking the Hudson, this house commands a view for miles. Exterior of hand-hewn cypress shingles given whitewashed effect; roof of red cedar shingles laid with varying exposures and stained two shades of brown; shutters olive green.

Interior woodwork in enamel, putty color in living room, pumpkin yellow in playroom, and white elsewhere. Library paneled in gumwood stained to cherry. Floors of principal rooms oak planks, doweled, stained and waxed. House heated by vapor with thermostat control. Built in 1919; cost 47 cents per cubic foot.



Photos by John Wallace Gillies

HOUSE FROM APPROACH

HOUSE OF FRANCIS BOARDMAN, ESQ., RIVERDALE-ON-HUDSON, N. Y.

DWIGHT JAMES BAUM, ARCHITECT

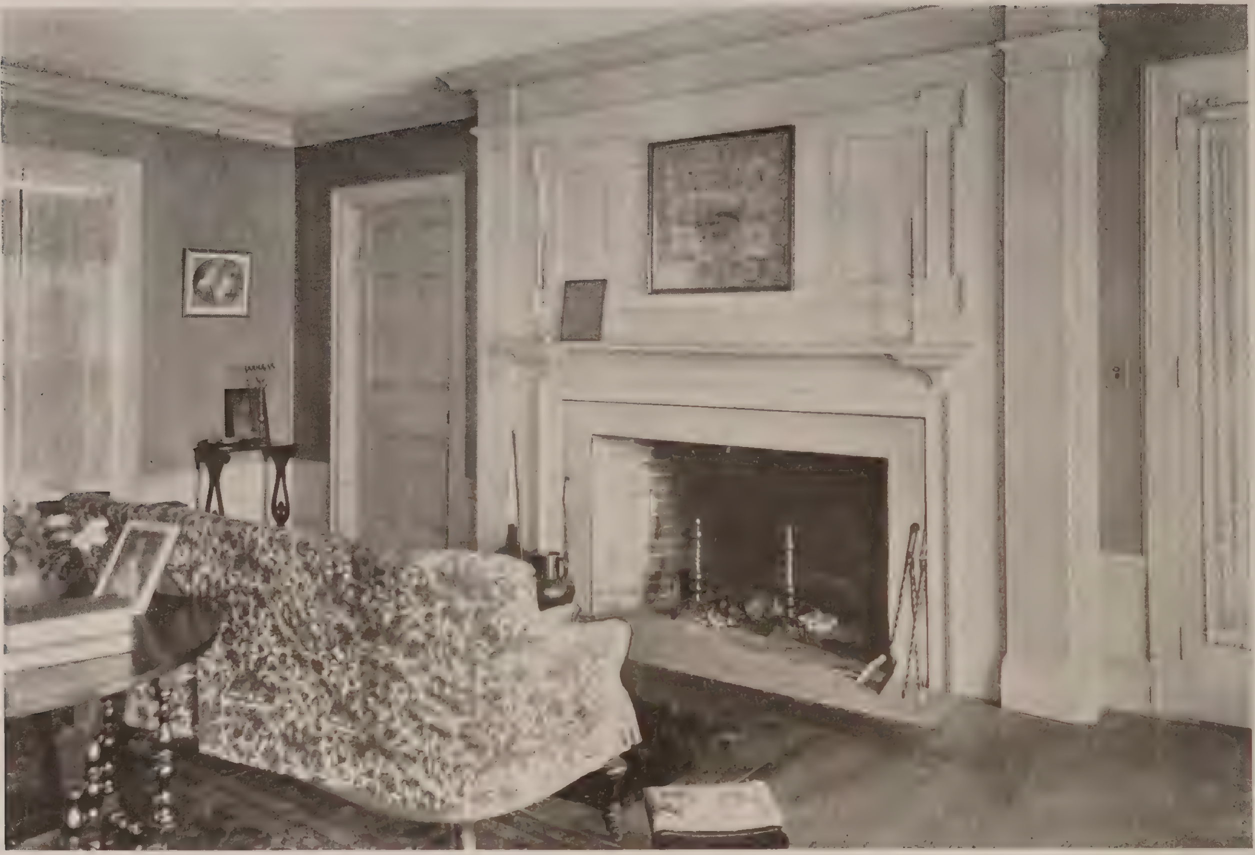


Photo by Paul J. Weber

LIVING ROOM

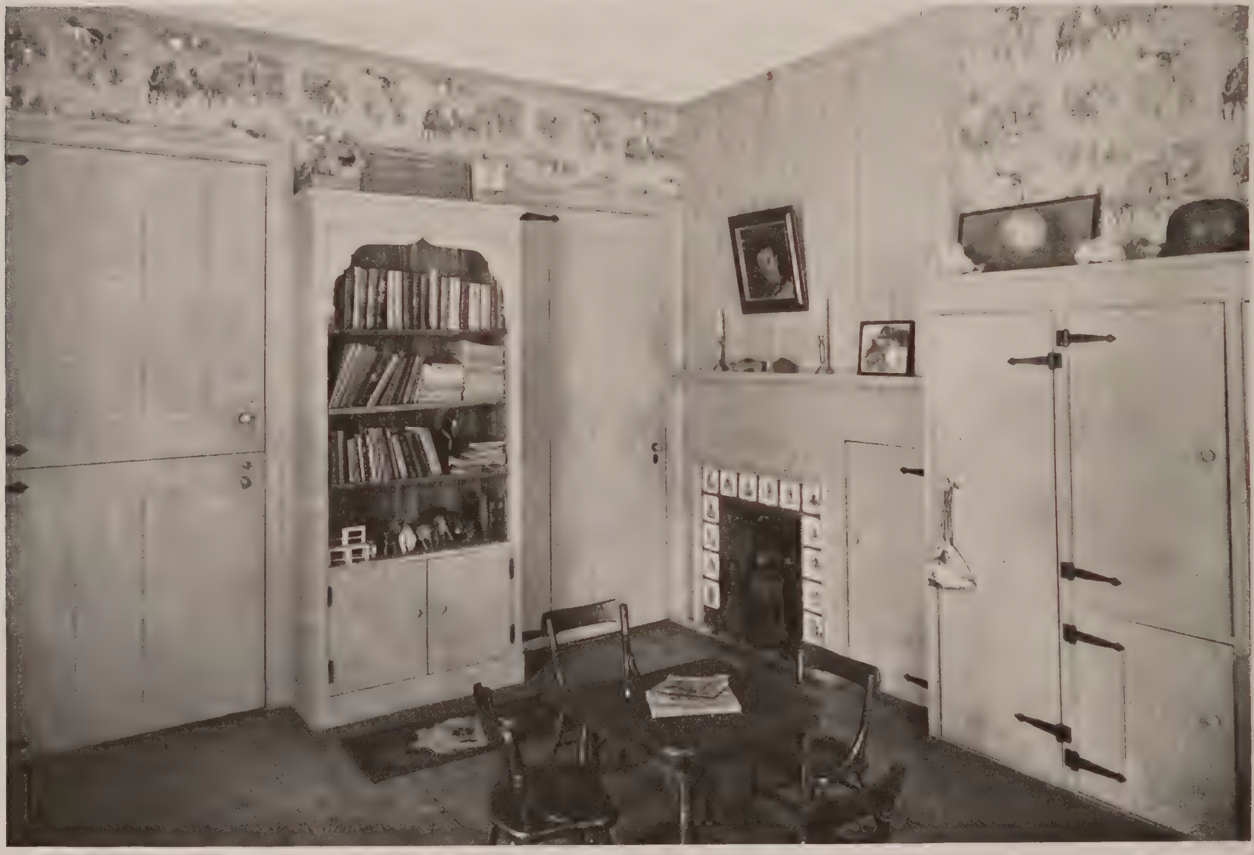
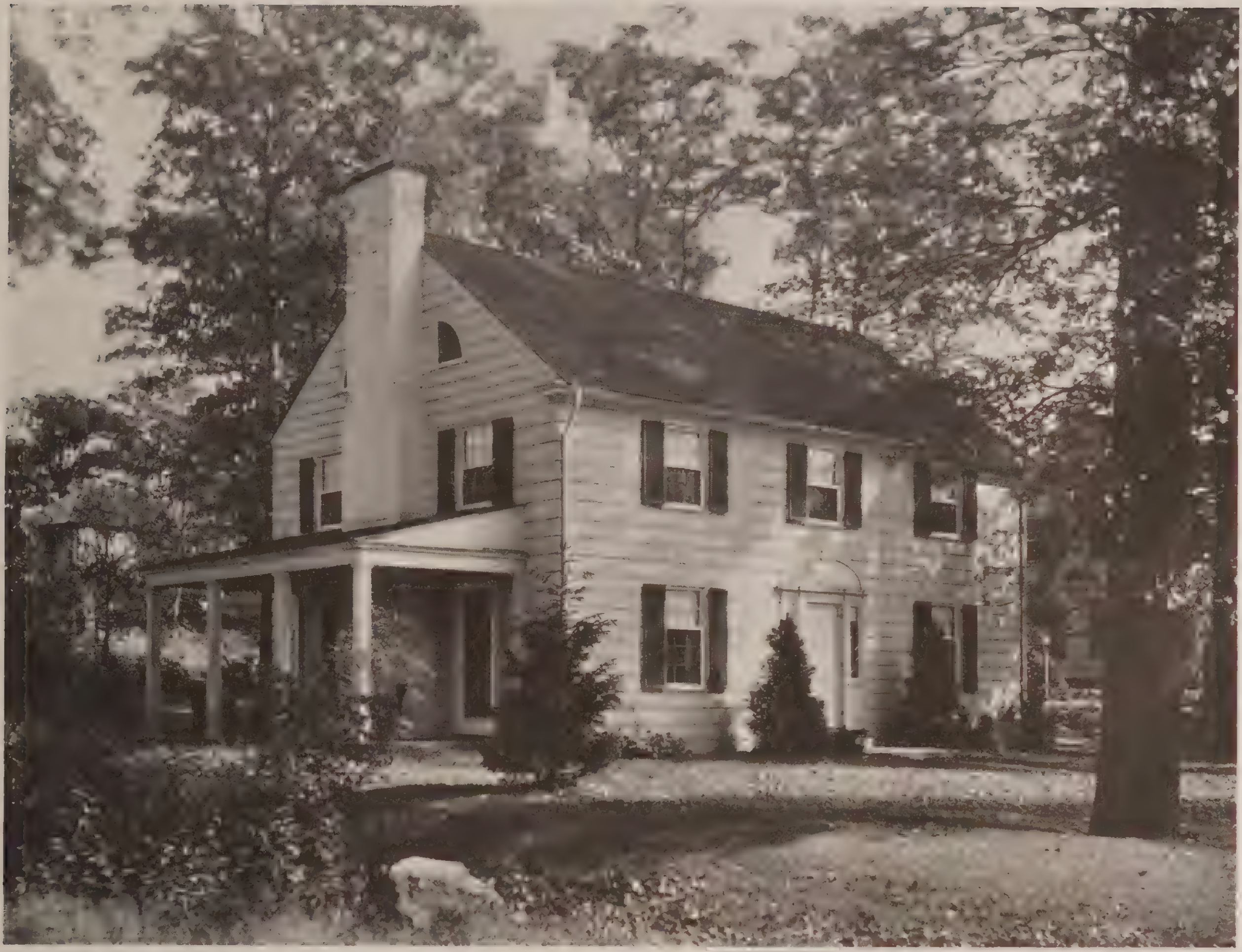


Photo by John Wallace Gillies

PLAY ROOM

HOUSE OF FRANCIS BOARDMAN, ESQ., RIVERDALE-ON-HUDSON, N. Y.

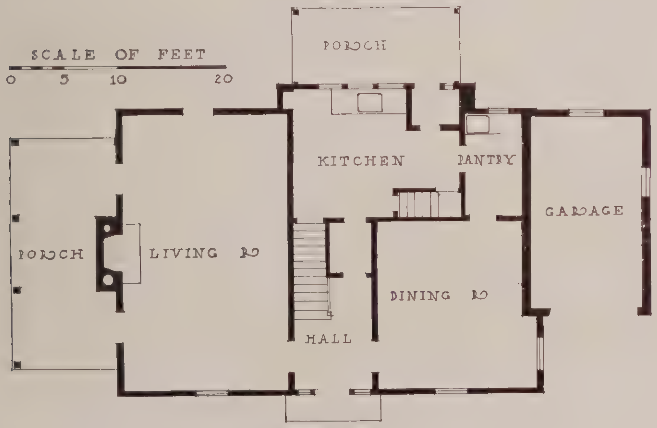
DWIGHT JAMES BAUM, ARCHITECT



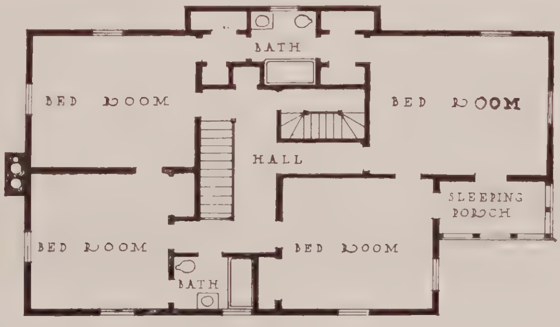
Photos by Paul J. Weber

HOUSE OF A. V. OLCOTT, ESQ., FIELDSTON, N. Y.
DWIGHT JAMES BAUM, ARCHITECT

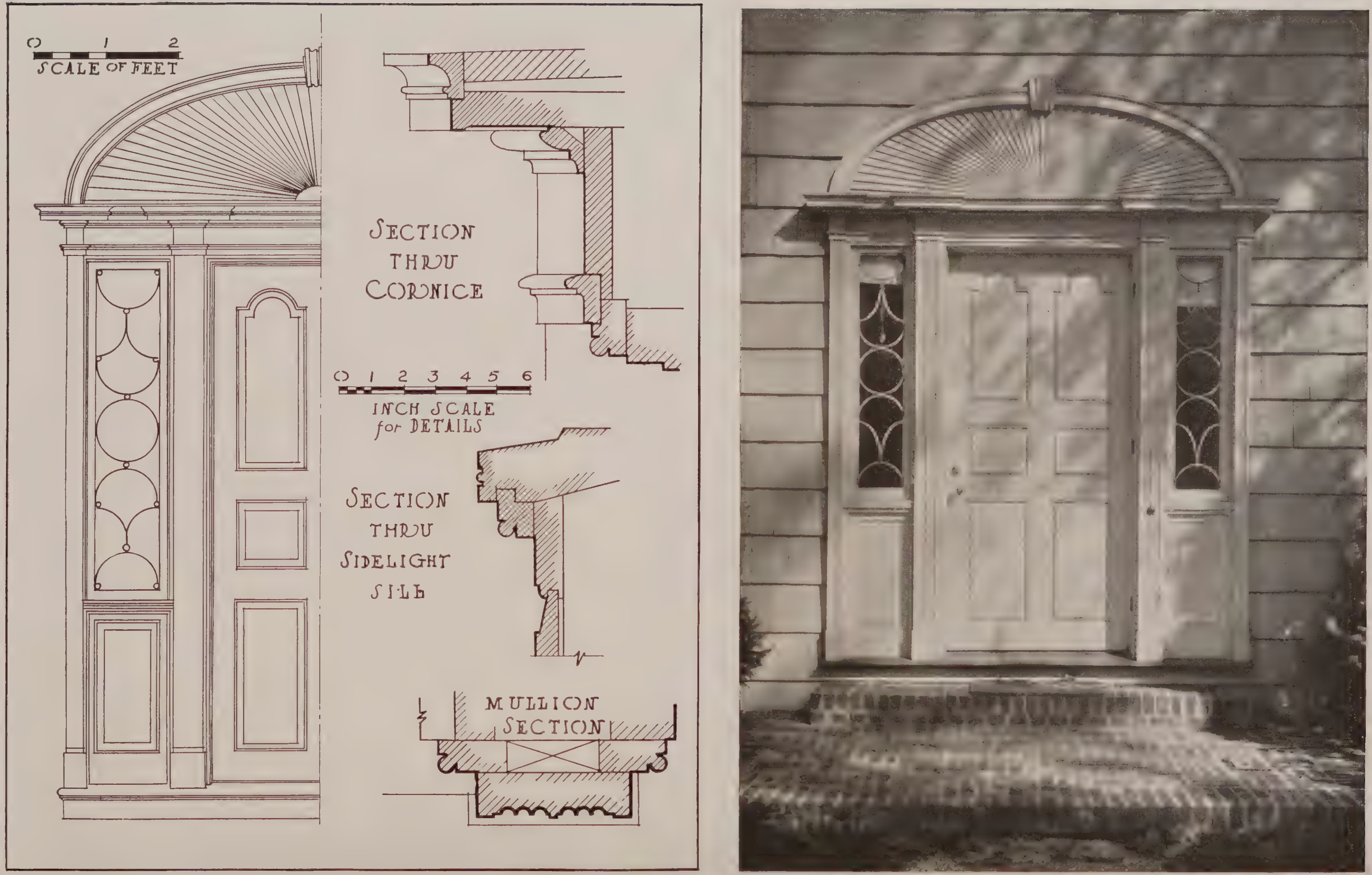
RED cedar 24-inch shingles, laid 10 inches to the weather and stained to imitate whitewash are used for the exterior walls of this house. The roof is of 18-inch shingles laid about 5 inches to the weather and stained two shades of moss green. Window blinds are gray-green. The outside chimney is of common brick, whitewashed. Interior walls are sand finished and tinted, and trim throughout is finished in eggshell enamel. The floors of the lower story are of oak, while on the upper floor use has been made of comb grain pine, varnished. Heating of the building including the garage is by hot water. Building operations were begun in September, 1919, and completed in June, 1920, at an approximate cubic foot cost of 47 cents. The architect was given charge of landscaping the grounds and the planting of shrubbery. The garage is pleasingly incorporated in the design and fireproofed on the interior with metal lath and cement plaster. A sleeping porch is built above it.



FIRST FLOOR PLAN



SECOND FLOOR PLAN



DETAILS OF ENTRANCE DOORWAY

HOUSE OF A. V. OLCOTT, ESQ., FIELDSTON, N. Y.

DWIGHT JAMES BAUM, ARCHITECT

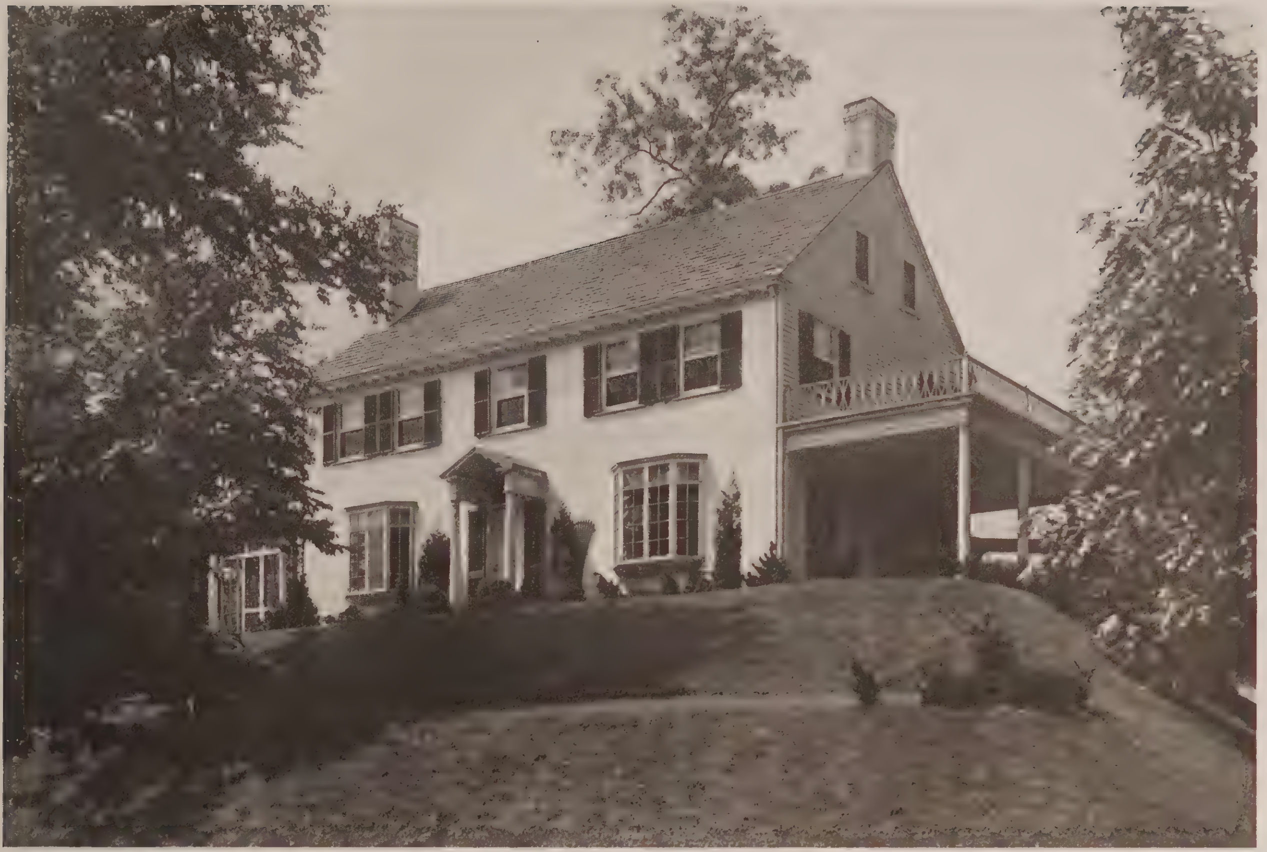


Photo by John Wallace Gillies

GENERAL VIEW FROM ROAD

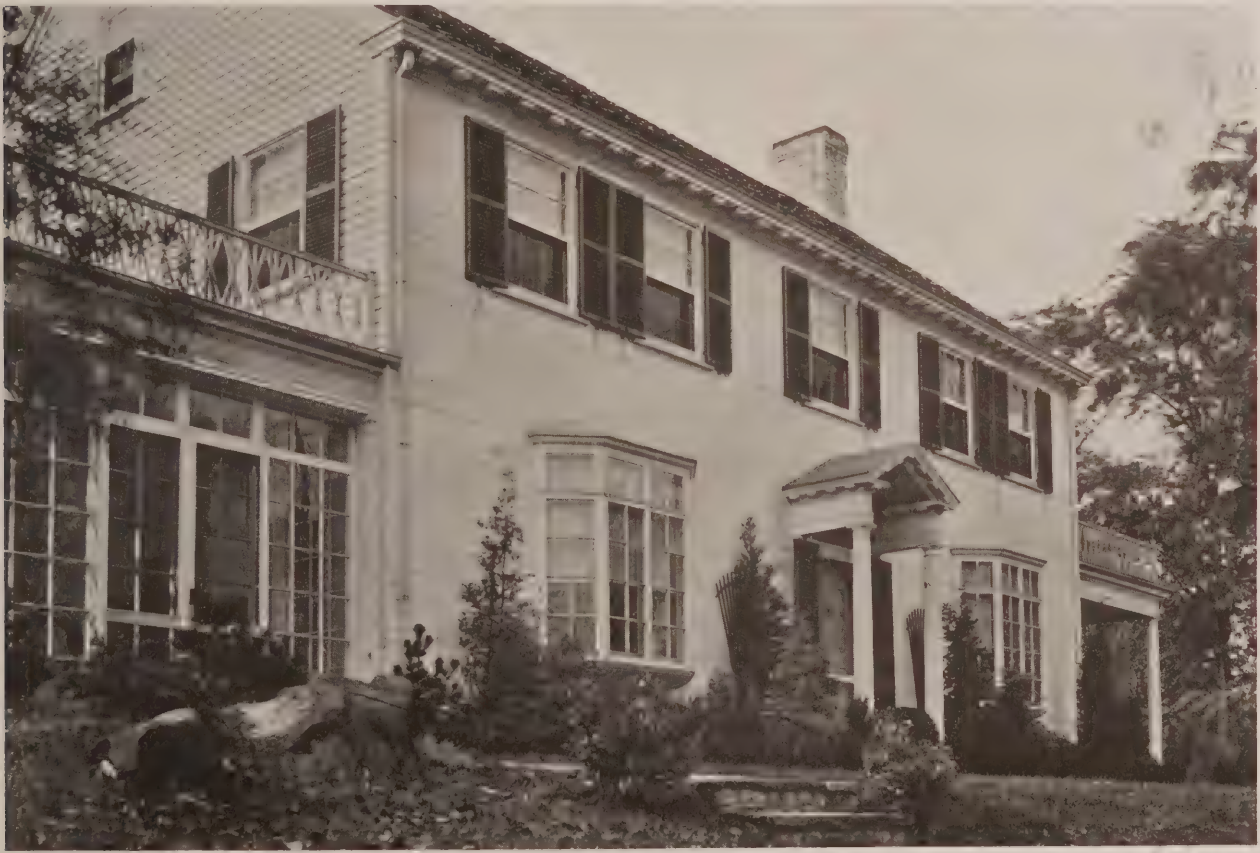
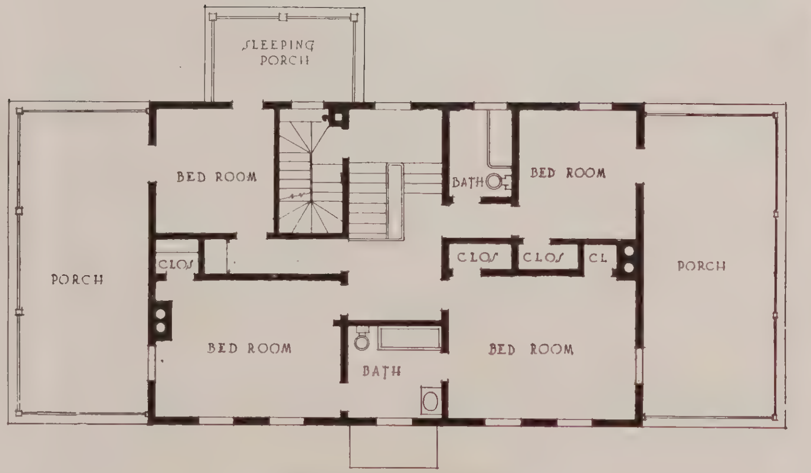


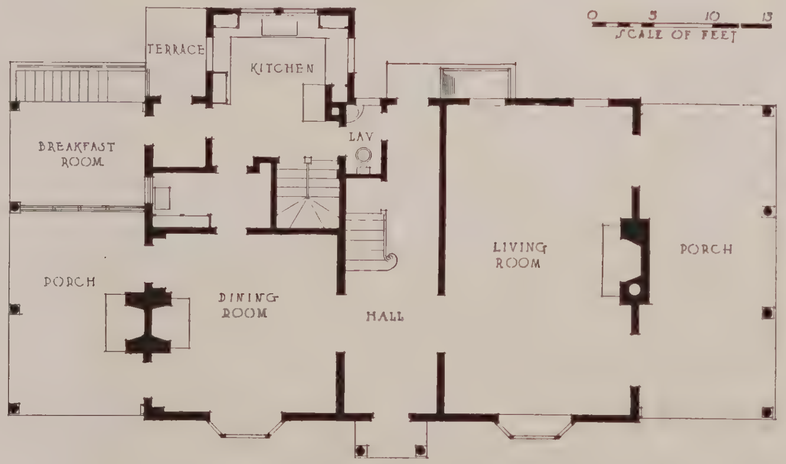
Photo by Paul J. Weber

DETAIL OF FRONT

HOUSE OF EDWARD P. SCHELL, ESQ., FIELDSTON, N. Y.
DWIGHT JAMES BAUM, ARCHITECT

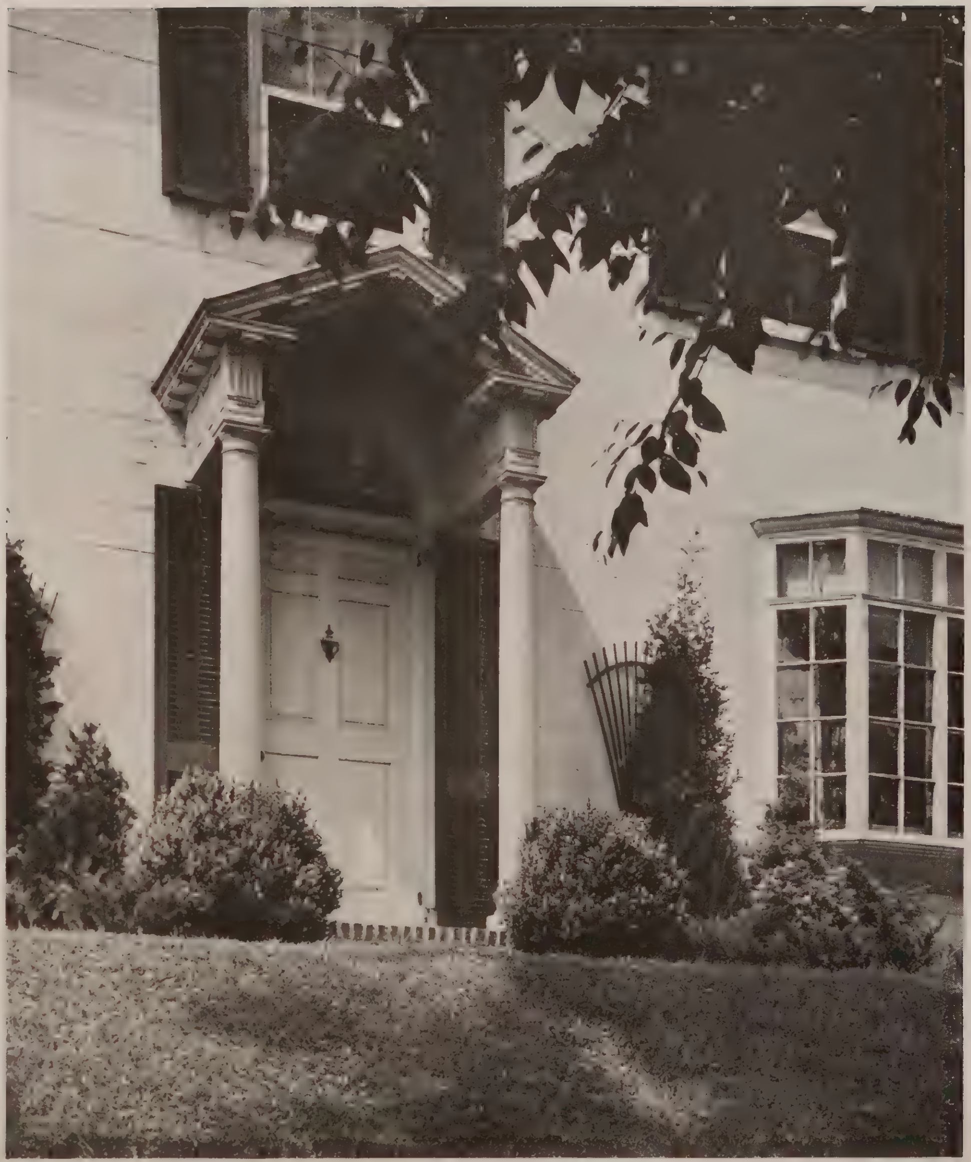


SECOND FLOOR PLAN



FIRST FLOOR PLAN

FRONT of white pine shiplap, laid in white lead; sides and rear of pine siding with corner boards; roof of 24-inch, hand-hewn cypress shingles, stained two shades of brown; bright yellow-green blinds. Heating by hot water, with exposed radiators. Work begun September, 1919; cost approximately 65 cents per cubic foot.

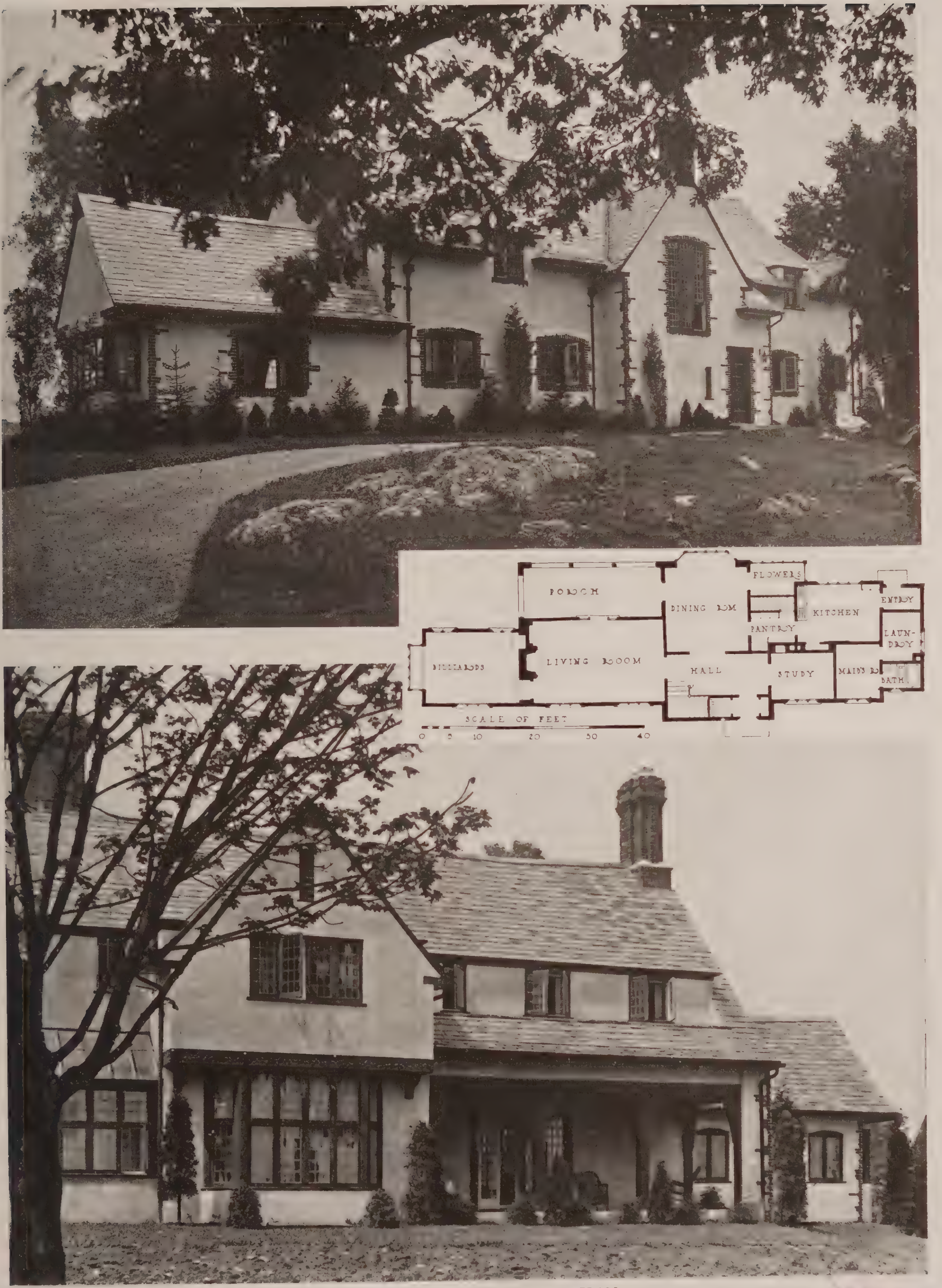


Photos by John Wallace Gillies

DETAIL OF ENTRANCE

HOUSE OF EDWARD P. SCHELL, ESQ., FIELDSTON, N. Y.

DWIGHT JAMES BAUM, ARCHITECT

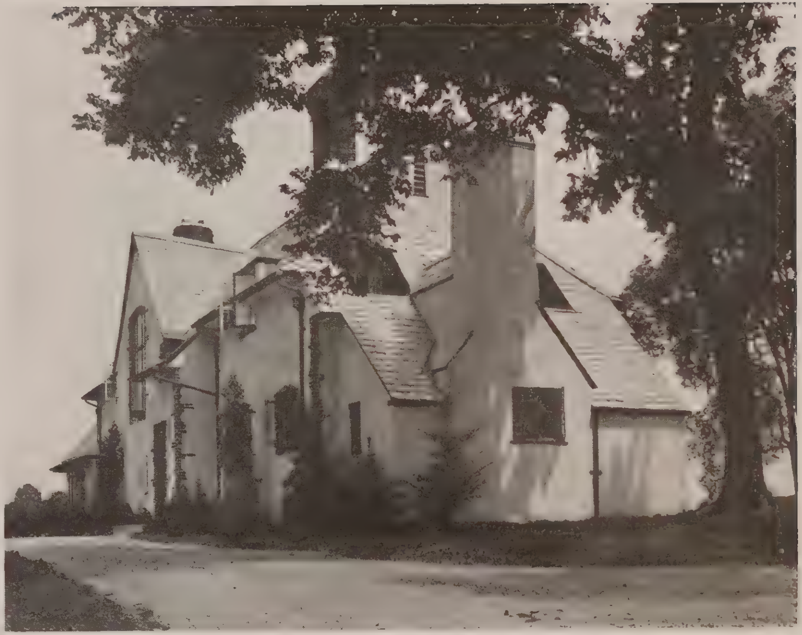


Photos by Tebbs Architectural Photo Co.

EXTERIOR VIEWS AND FIRST FLOOR PLAN

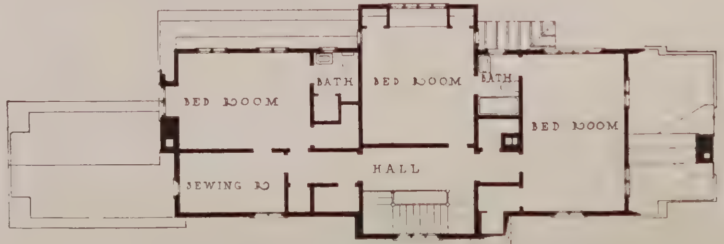
HOUSE OF W. J. GRIFFIN, ESQ., HARTSDALE, N. Y.

W. STANWOOD PHILLIPS, ARCHITECT

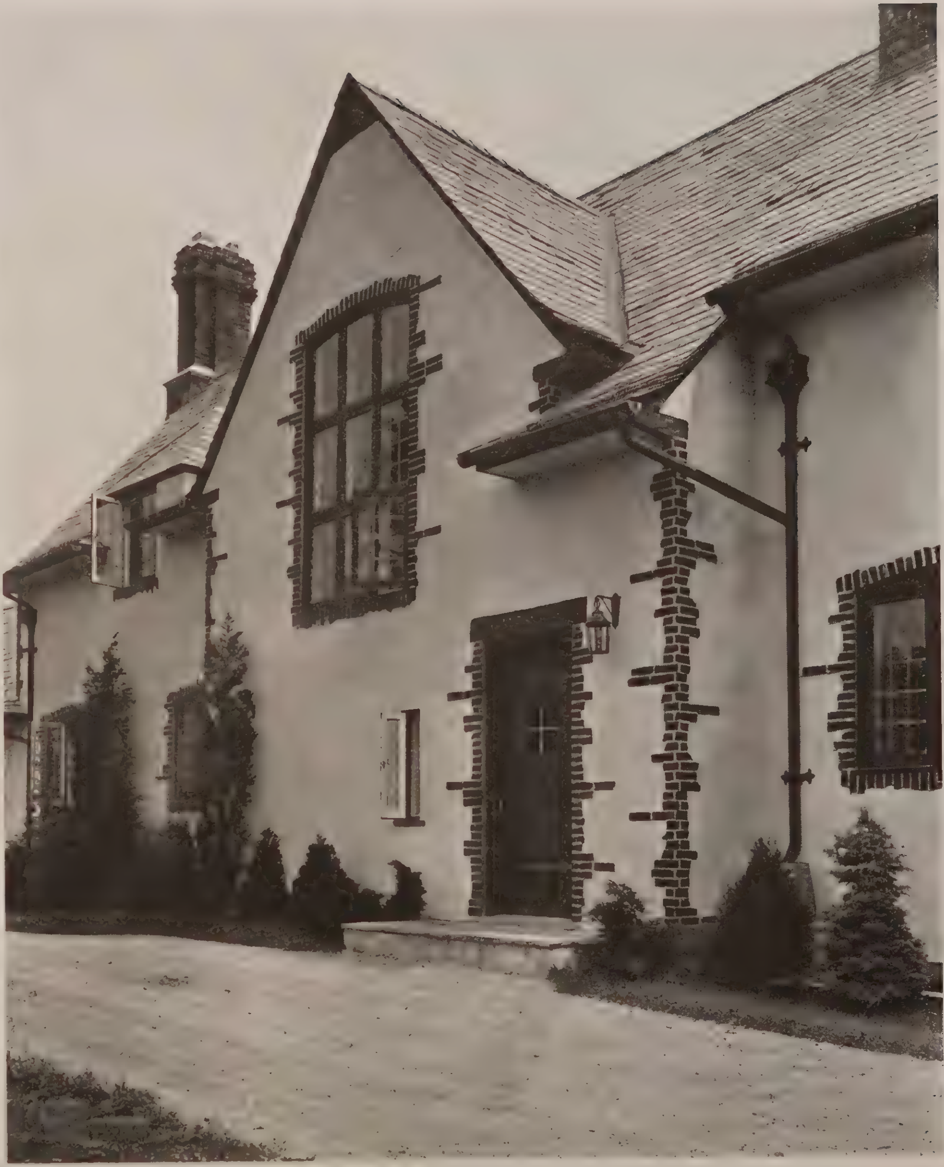


SERVICE END

BUILT on a plot of considerable acreage, it was desired here to adopt a type suggesting a low, rambling farmhouse. Walls stucco on metal lath and wood frame; roof of variegated slate of random thickness; ingenious use of brick as ornament; prevailing colors of exterior are brown and cream gray. Interior finish of whitewood detailed in early Georgian fashion; floors of oak with antique finish. Heating is by hot water. Contract let in April, 1921, at 47 cents per cubic foot.



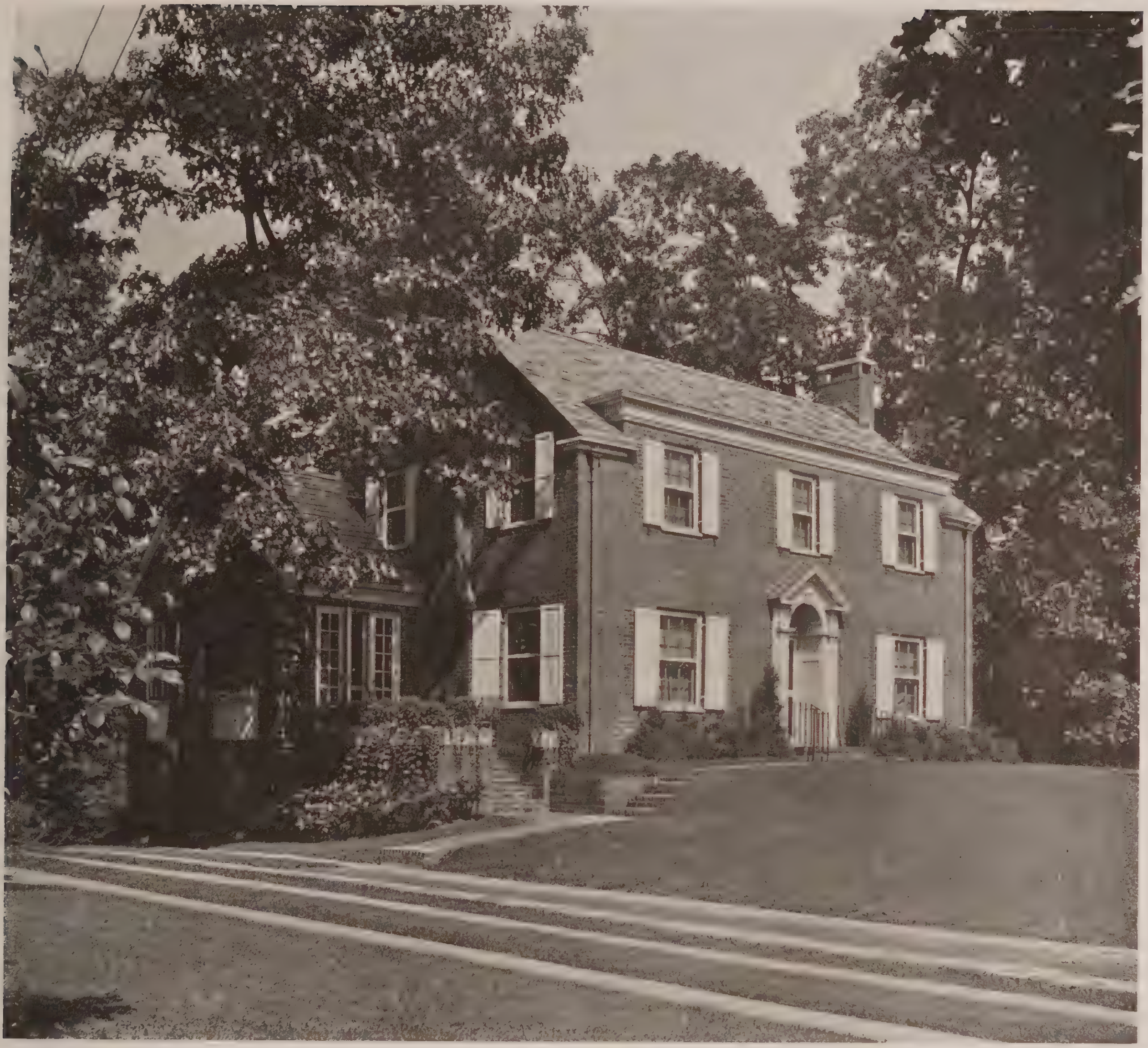
SECOND FLOOR PLAN



DETAIL OF ENTRANCE FRONT

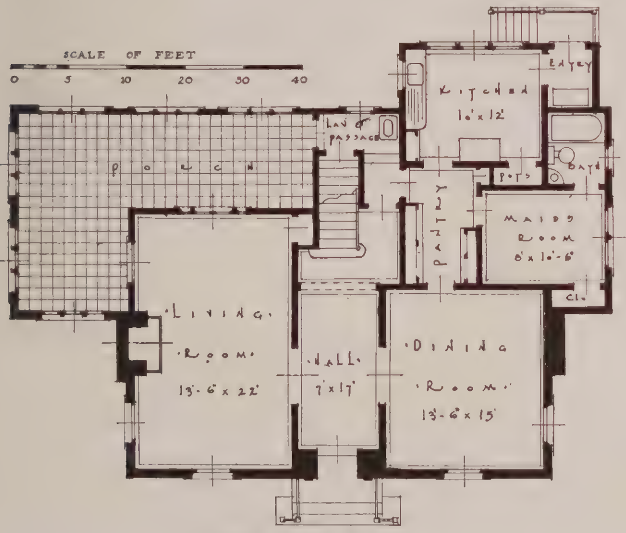
HOUSE OF W. J. GRIFFIN, ESQ., HARTSDALE, N. Y.

W. STANWOOD PHILLIPS, ARCHITECT

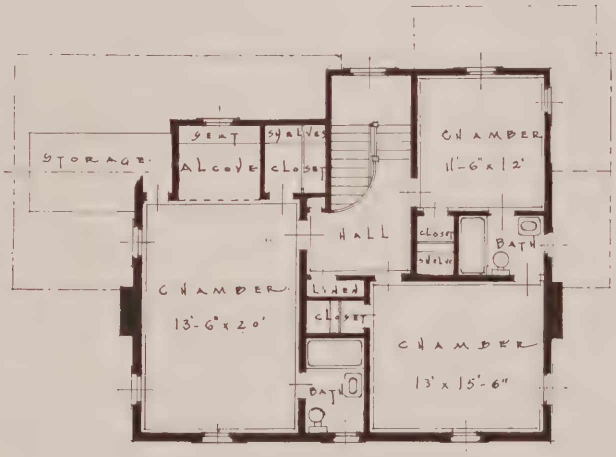


Photos by Tebbs Architectural Photo Co.

VIEW FROM THE ROAD



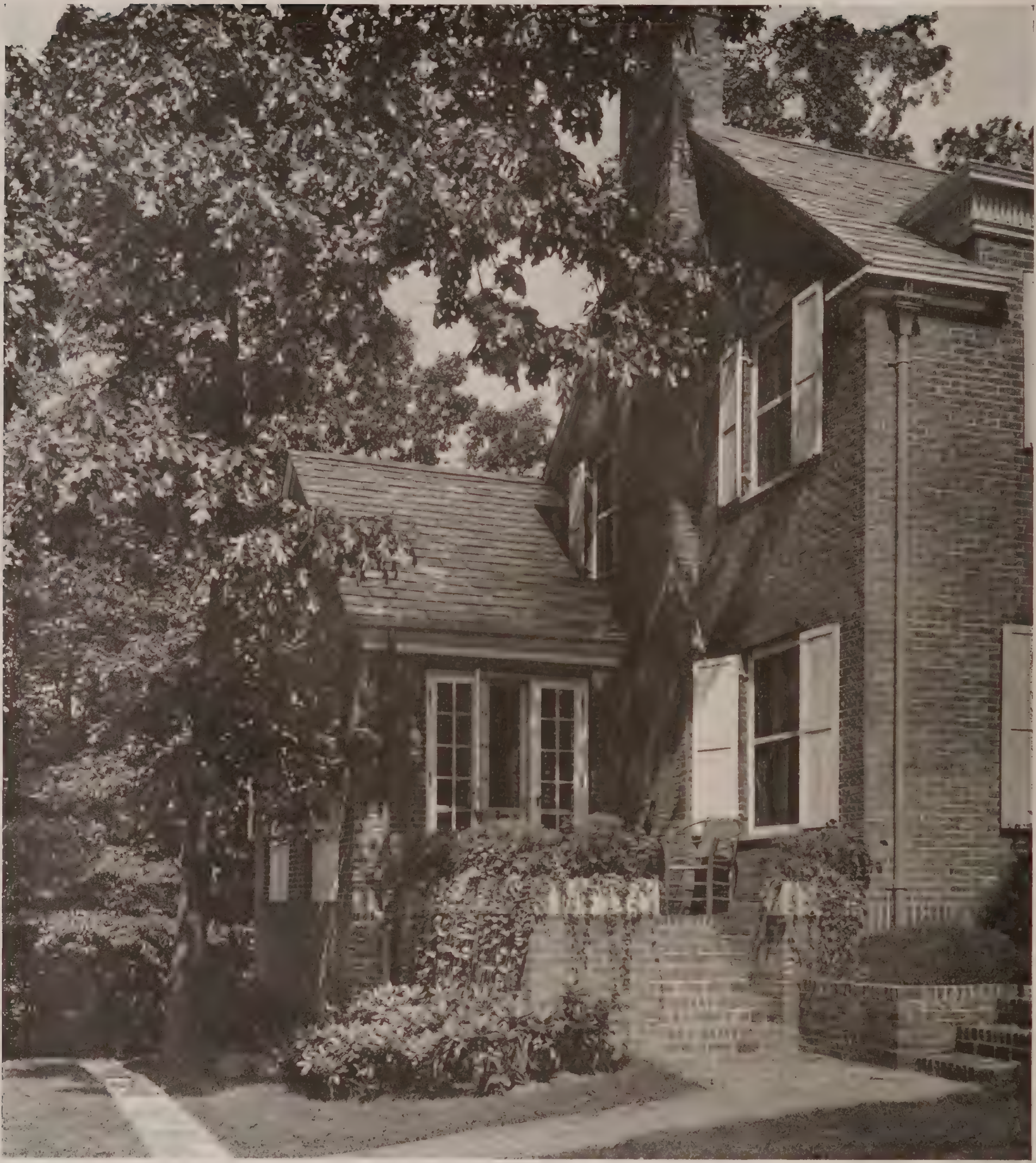
FIRST FLOOR PLAN



SECOND FLOOR PLAN

HOUSE OF W. J. SCOTT, ESQ., SCARSDALE, N. Y.

W. STANWOOD PHILLIPS, ARCHITECT



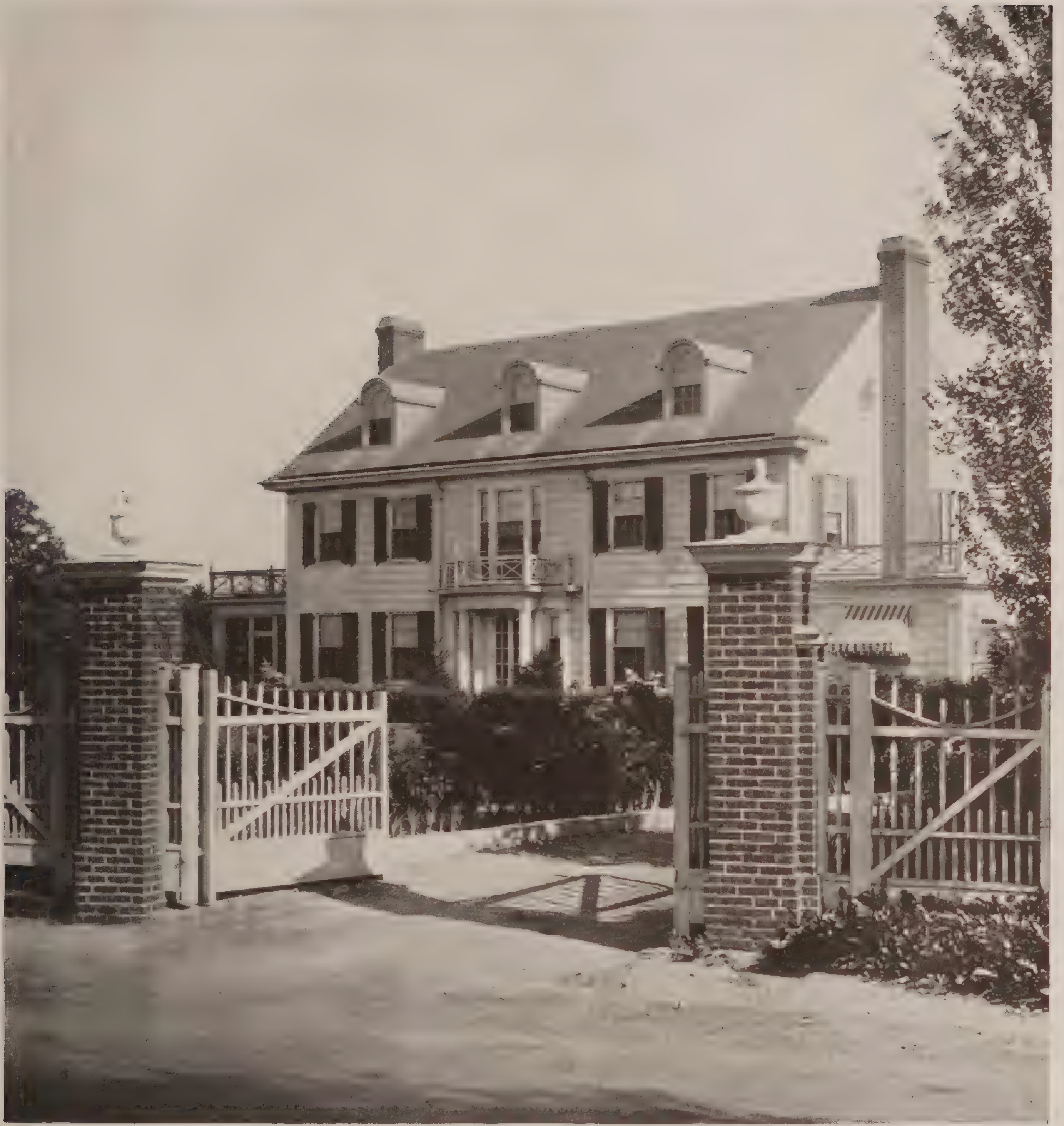
DETAIL OF ENTRANCE SIDE

HOUSE OF W. J. SCOTT, ESQ., SCARSDALE, N. Y.

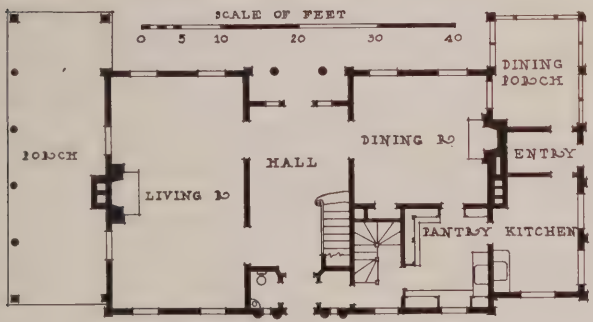
W. STANWOOD PHILLIPS, ARCHITECT

BRICK veneer over frame construction has been used for this house, the roof being of slate of different colors, while the trim of the exterior and the shingled walls where they occur are painted white. The low platform before the main entrance as well as the steps which lead to it are of brick laid on edge, and the simple balustrade at each side of the doorway is of wrought iron painted black and trimmed with brass. The finish of the interior which is of colonial pattern is painted cream and floors are of oak. Heating is by steam. The building contract was let in April, 1921, and the cost of the house was 42 cents per cubic foot.

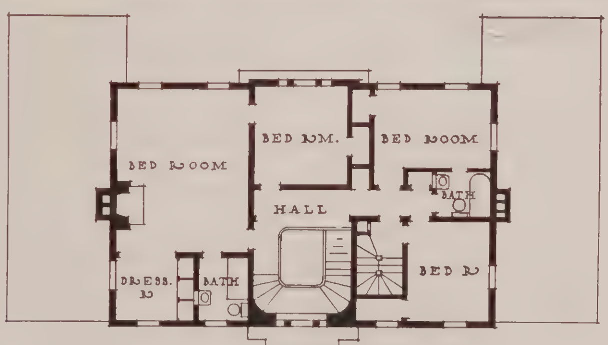
Much of the effect of space which the grounds present is due to the way in which the approach to the house has been managed. Had there been the customary straight pavement from the sidewalk to the doorway the grounds would have been cut up and would have possessed little of their present dignity of appearance.



VIEW FROM DRIVE ENTRANCE



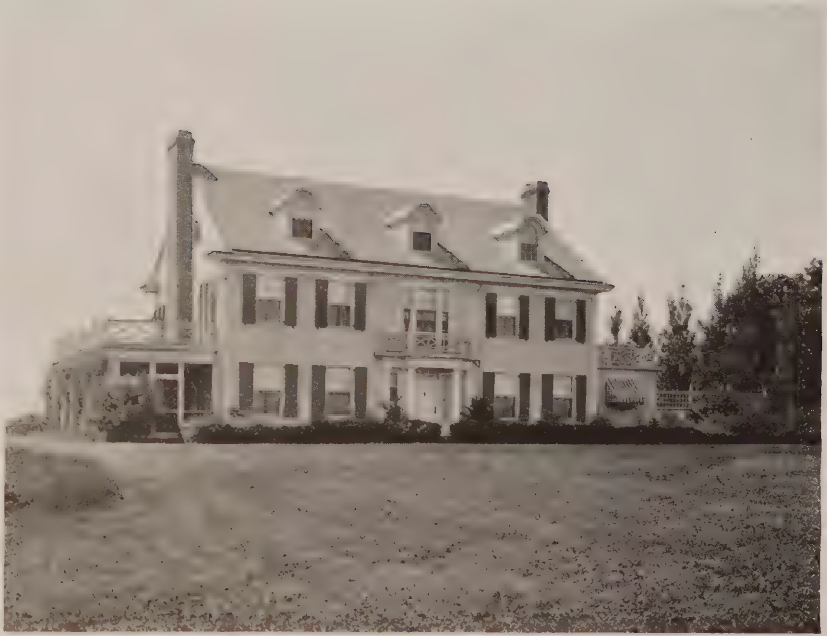
FIRST FLOOR PLAN



SECOND FLOOR PLAN

HOUSE OF F. L. FORD, ESQ., ST. JOSEPH, MO.

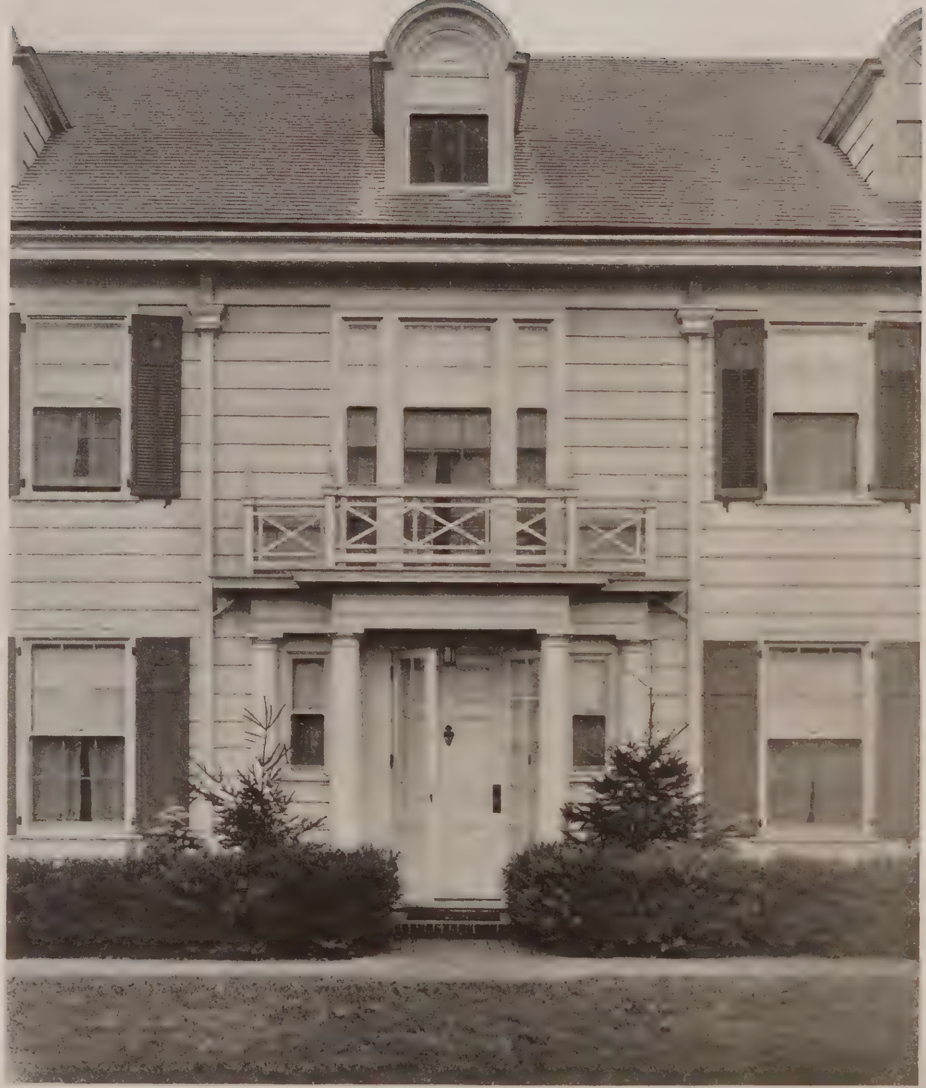
ECKEL & ALDRICH, ARCHITECTS



VIEW FROM LAWN

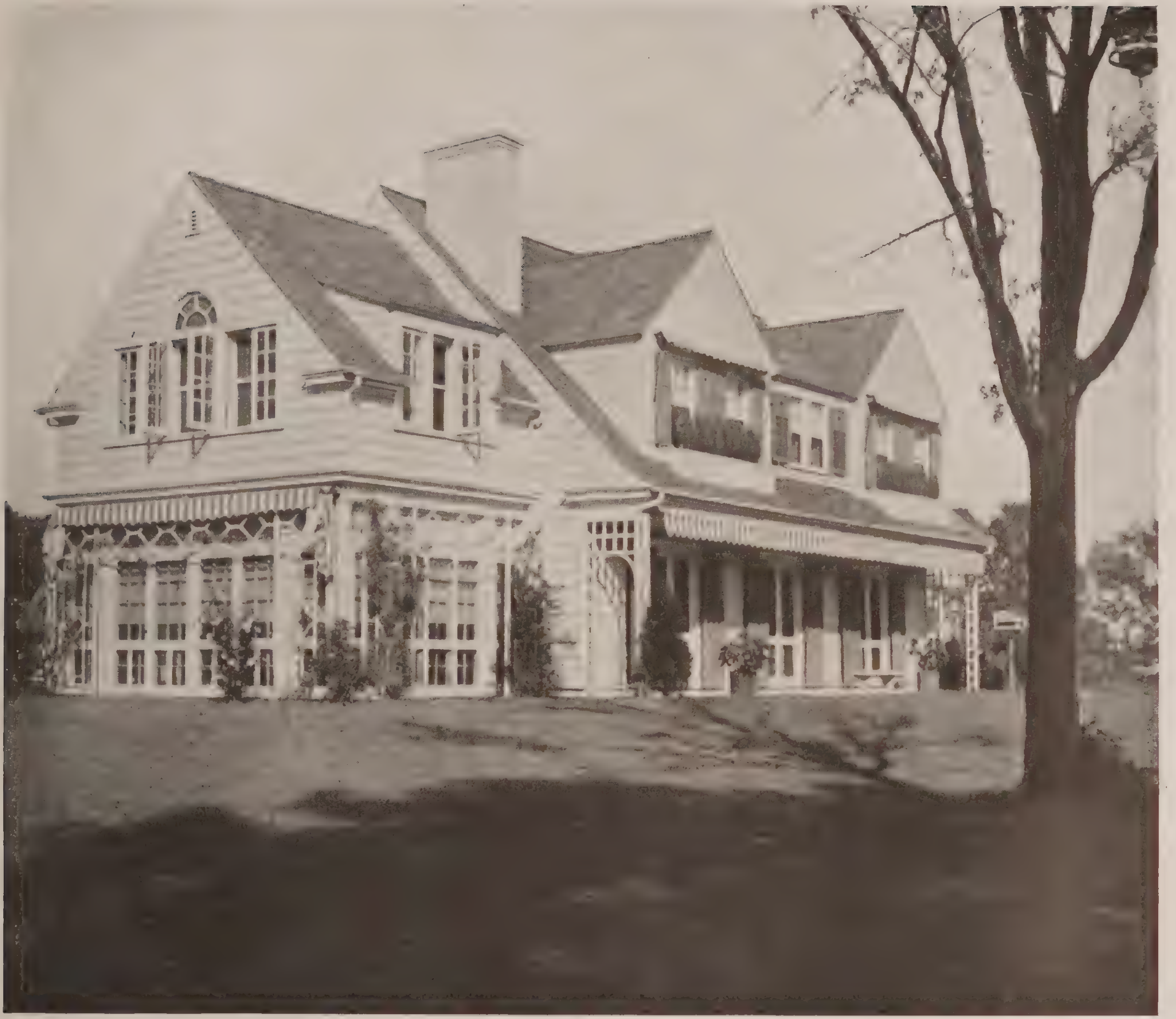
SPECIALLY sawn cedar shingles 24 inches long and finished in white cover the walls of this house, the cedar shingles upon the roof being stained a weathered silver gray; blinds are bronze green. The interior finish throughout the house is of clear birch. Floors in living room, dining room, stair hall and stair landings are of quarter sawed oak; other floors in the first and all in the second story are of edge or comb grain quarter sawed yellow pine. The house is equipped with furnace heat. Contract was let in 1915, and the cost of the building was 24 cents per cubic foot.

The architects of the house were also given charge of the planning and laying out of the grounds; thus the house and its surroundings were from the first regarded as constituting one complete work, and each was developed with an eye for the appearance and dignity of the place as a whole. The planting has been done with a view to increasing the apparent size of the estate and to creating privacy by screening neighboring buildings.



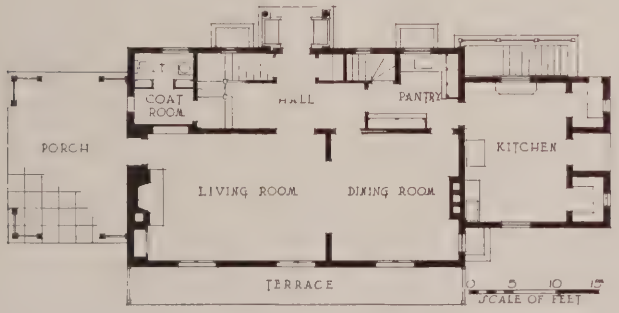
DETAIL OF ENTRANCE

HOUSE OF F. L. FORD, ESQ., ST. JOSEPH, MO.
ECKEL & ALDRICH, ARCHITECTS

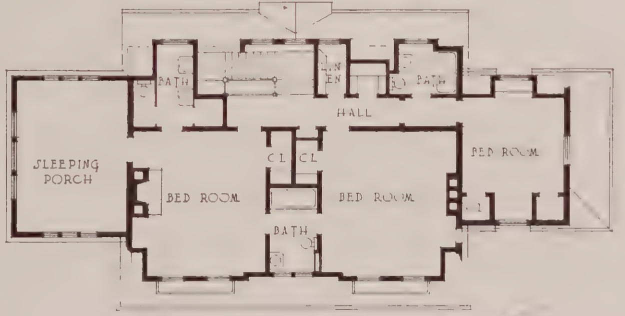


HOUSE OF STUART STICKNEY, ESQ., ST. LOUIS, MO.
LA BEAUME & KLEIN, ARCHITECTS

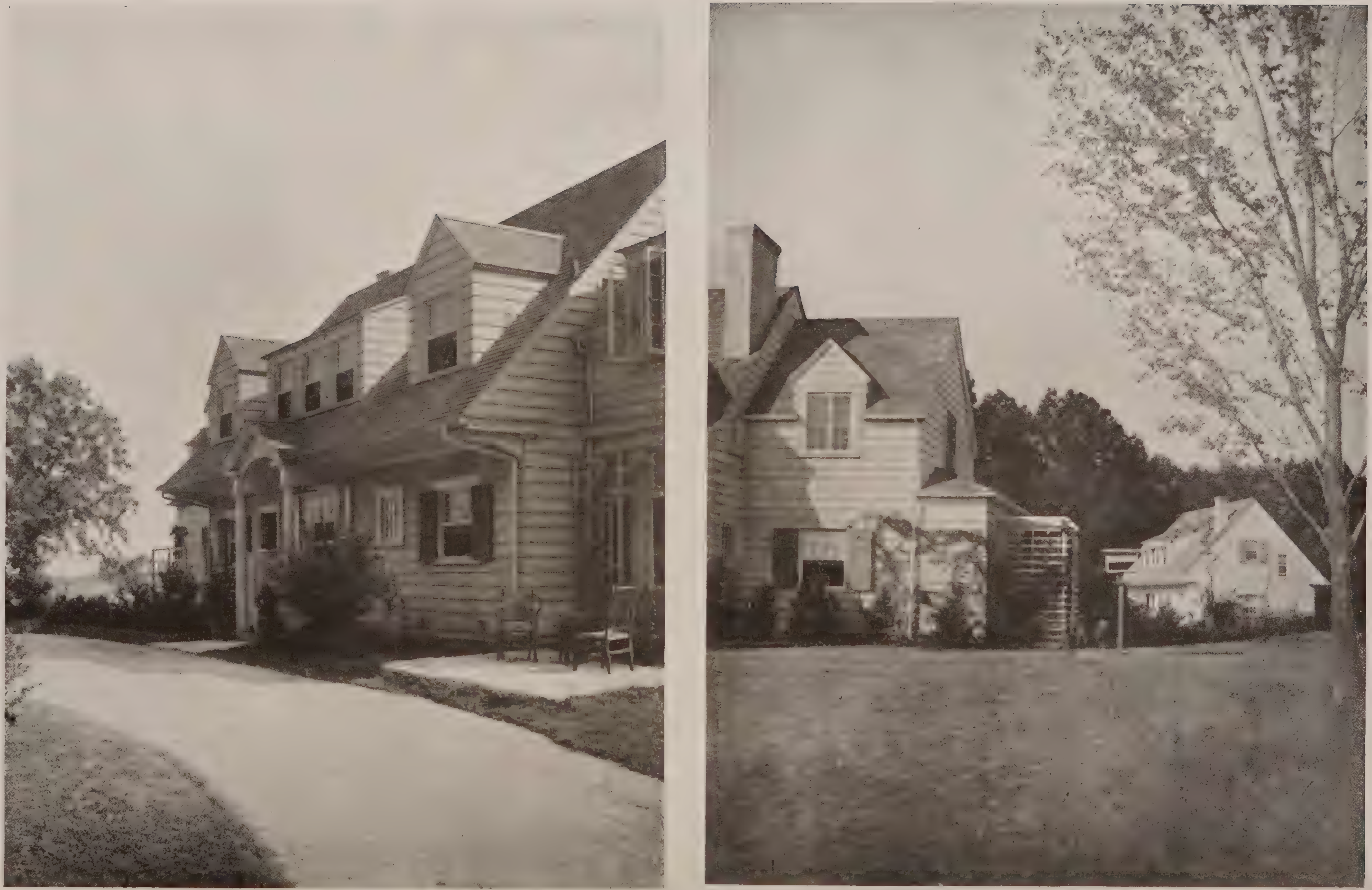
HERE the outer walls are covered with drop siding finished in white, while the roof is covered with cypress shingles which have been stained in two tones, and window blinds where they are used are painted green. Birch has been used for interior trim and the floors are of oak excepting in the few rooms where tile has been used for flooring. Heat is supplied from a hot air furnace. For the sleeping porch which occupies the space above the veranda at one end of the house use has been made of casement windows which are particularly appropriate when it is desirable to open all the available window space; such windows do not interfere with the use of screens which are arranged inside like double hung windows. The cost was 55 cents per cubic foot, the building contract let during 1920.



FIRST FLOOR PLAN



SECOND FLOOR PLAN



DETAIL OF ENTRANCE SIDE

SERVICE WING

HOUSE OF STUART STICKNEY, ESQ., ST. LOUIS
LA BEAUME & KLEIN, ARCHITECTS

Planting as a Practical Factor in Domestic Architecture

By C. STANLEY TAYLOR

THE field of better class residential architecture offers a most interesting opportunity for practical analysis of the artistic and business factors involved, as well as in relation to the advancement of structural science bearing importantly upon modern domestic architecture.

It may be said that the average residential project involves three types of professional service and advice, which if properly correlated insure highly satisfactory results from the viewpoint of the owner and future tenant of the dwelling and grounds in question. These three forms of professional service include architecture, interior decoration, and landscape architecture. Of the three, the subject of the proper development and planting of the land has received less detailed and serious consideration, not only by the owner but also by the architect. It is interesting to note, however, that this condition is rapidly changing. As never before, the architect is realizing that his interest and service should not be confined to the designing of the buildings, but that the decorating and furnishing of the house and the development of the surrounding land to complete the picture contribute vitally to the complete realization of the plan which he has conceived and wishes to carry out.

In previous issues of THE

Oak Gate in Hedge Opening
Garden of Mrs. John Nicholas Brown, Newport
Harold Hill Blossom, Landscape Architect

Garden of Mr. and Mrs. Bertram H. Borden
Marion Coffin, Landscape Architect
Perennial borders either side of grass path on axis with house

Garden of Mrs. John Nicholas Brown, Newport
Ascending spikes of bloom contrast pleasantly with the heavy mass of the hedge; first season

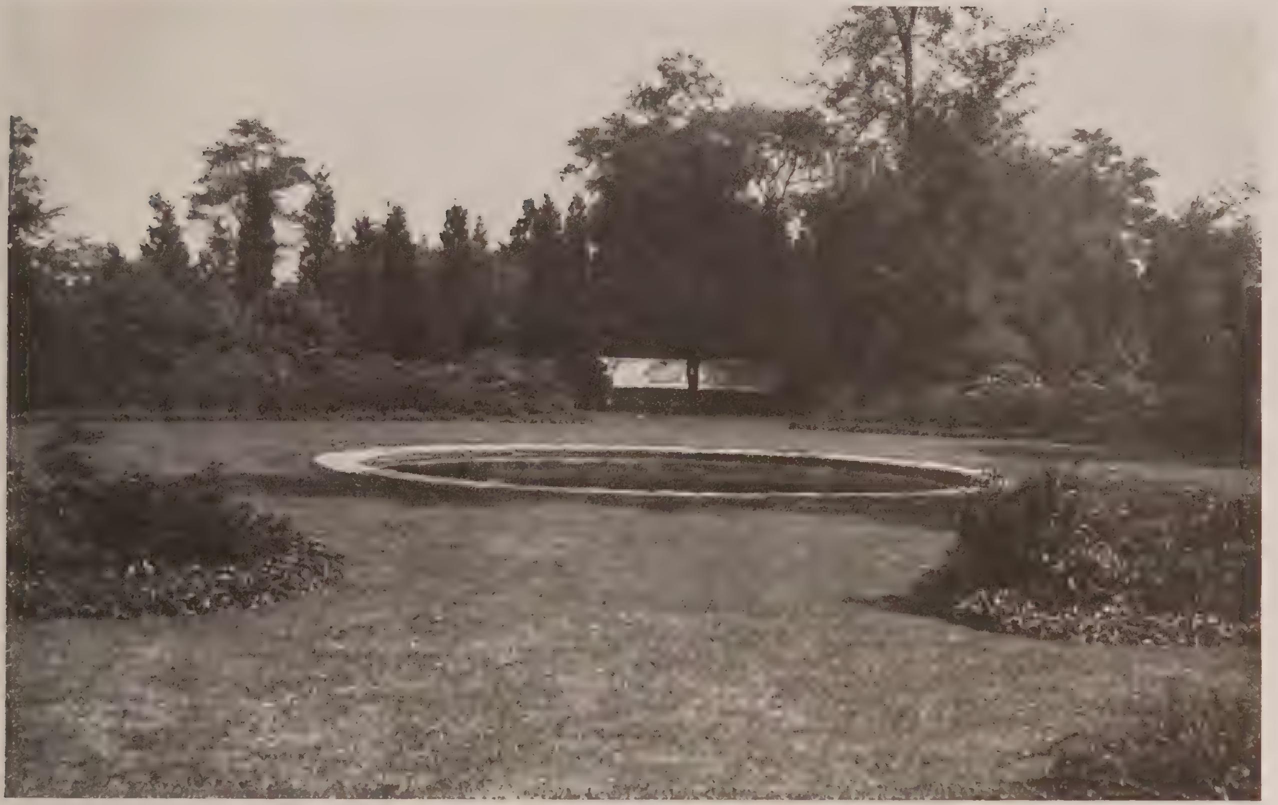
Garden at Wenham, Mass.
Stone retaining walls, steps and flag paved paths at intersection of three levels

ARCHITECTURAL FORUM editorial consideration has been given to the element of interior decoration, not only as to the artistic factors involved but also covering practical points of professional relationships and commercial conditions in this field. Unquestionably there are architects well fitted to act as interior decorators and as landscape architects. Generally speaking this is not the case, and the most successful results are obtained through professional co-operation between architects, interior decorators, and landscape architects in the interest of the client.

Architects are rarely given the opportunity of understanding fully the scope and responsibility of the services of good landscape architects, or for that matter of realizing fully the importance of well developed and correctly planted residential sites which intrinsically and æsthetically create increased values for the owners. From the architectural designer's viewpoint perhaps too little consideration has been given in the past to the possibilities of carefully considered landscaping. In fact the average architect should know much more than he does about the ultimate effects obtainable by the judicious use of trees, shrubs and other forms of planting. Every architect shows at least an unconscious desire to employ the medium of landscaping, particularly in residential design. This is shown by the fact that the final touches to most perspective sketches are given in the form of trees and shrubs indicated in pleasing mass and proportion, softening harsh lines, stressing points of architectural beauty, and screening some of the utilitarian features.

The architect primarily deals with static materials, such as brick, stone and wood. He realizes his design in complete form when the contractor leaves the finished project. The landscape designer manipulates dynamic materials,—live elements which are variable with the seasons and the years. He must interpret growth and color change, and allow even for destruction, where the architect considers only the mellowing of age. It may be seen, therefore, that landscape design is a distinct field, and whether this work is undertaken by the architect or by a landscape designer brought in on his recommendation, the important consideration is that the methods of procedure shall be correct. In order to indicate the detailed responsibility involved in such a project there are presented on other pages the typical problems and solutions concerned in the development of a specific project of

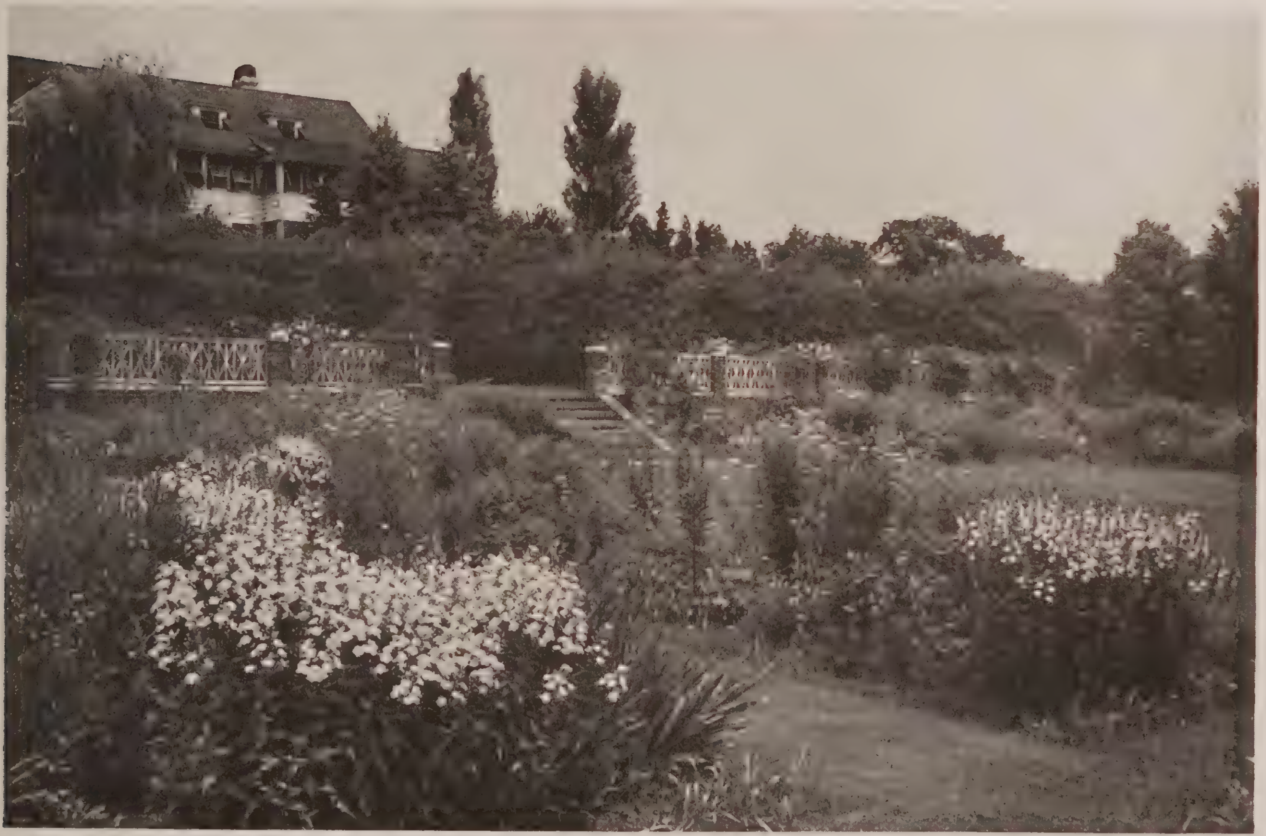
Stone Steps and Wall, Garden of Mrs. John Nicholas Brown, Newport
A garden view in November showing the importance of architectural features when foliage is failing
Harold Hill Blossom, Landscape Architect



CIRCULAR POOL ENCLOSED BY MASS PLANTING

GARDEN OF MR. AND MRS. FREDERICK FRELINGHUYSEN

MARION COFFIN, LANDSCAPE ARCHITECT



INFORMAL FLOWER GARDEN AND MASS PLANTING ON SLOPING GROUND

GARDEN OF MRS. DANIEL POMEROY

RUTH DEAN, LANDSCAPE ARCHITECT

Garden of Mrs. John Nicholas Brown, Newport
Harold Hill Blossom, Landscape Architect
View during first season showing effect that can be secured by using large material

this nature, a country estate, the property of Myron C. Taylor at Matinecock, New York.

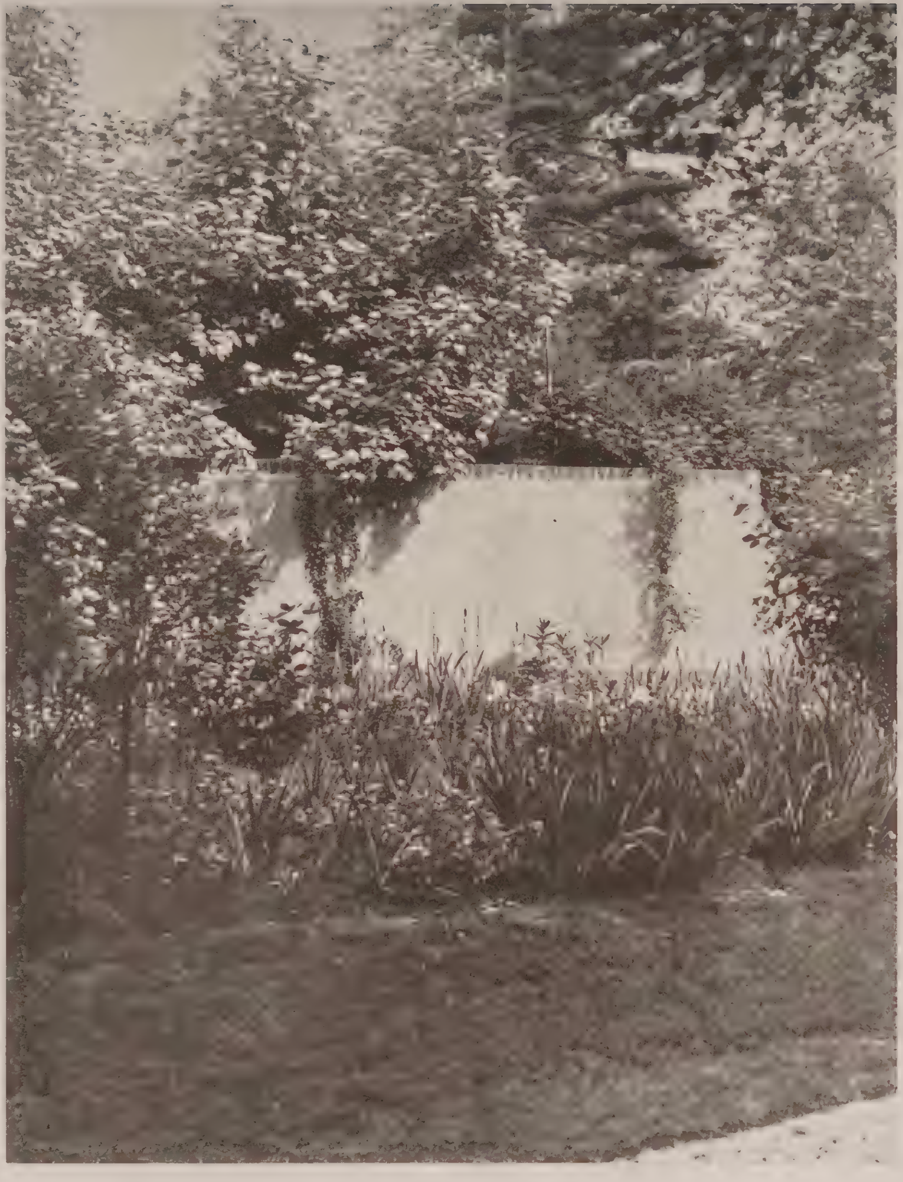
Meanwhile there are several important considerations and deductions which are indicated as of direct interest to the architect. One of the important considerations is that of the unending variety of form, color and texture available in planting through the resources of modern nursery service. How simple and satisfactory it is to place a few large trees at the correct points in the perspective sketch of a proposed residence, and yet how few architects realize that almost overnight this sketch may be made a reality—that trees of six, eight or ten inches in caliper dimensions may be purchased at reasonable prices, shipped and planted anywhere! It even becomes possible to extend the period influence of the architectural design to the type of planting selected. Trees and shrubs possess mass, proportion and texture as well as color that we unconsciously associate with definite geographical divisions. They may be selected to emphasize colonial, Georgian, Spanish and other period dwelling types. To many an architect this consideration should open up a fascinating avenue of study and applied knowledge.

The question of real estate value enters as a practical consideration on the part of the owner. There is no question but that good architectural design and good planning add materially to the sales value of a dwelling. Similarly, good landscaping adds not only its direct quota to the market valuation of residential property but facilitates selling when the property is placed on the market. Real estate brokers are familiar with the element of "impression" value in selling residential property. Many specific instances might be noted where actual sales have proved that good architecture and good landscaping add more than the total cost of professional services to the market value of the property. Good planting is less a luxury than it is a practical investment, paying double dividends in the form of increased property values and a greater measure of enjoyment and interest.

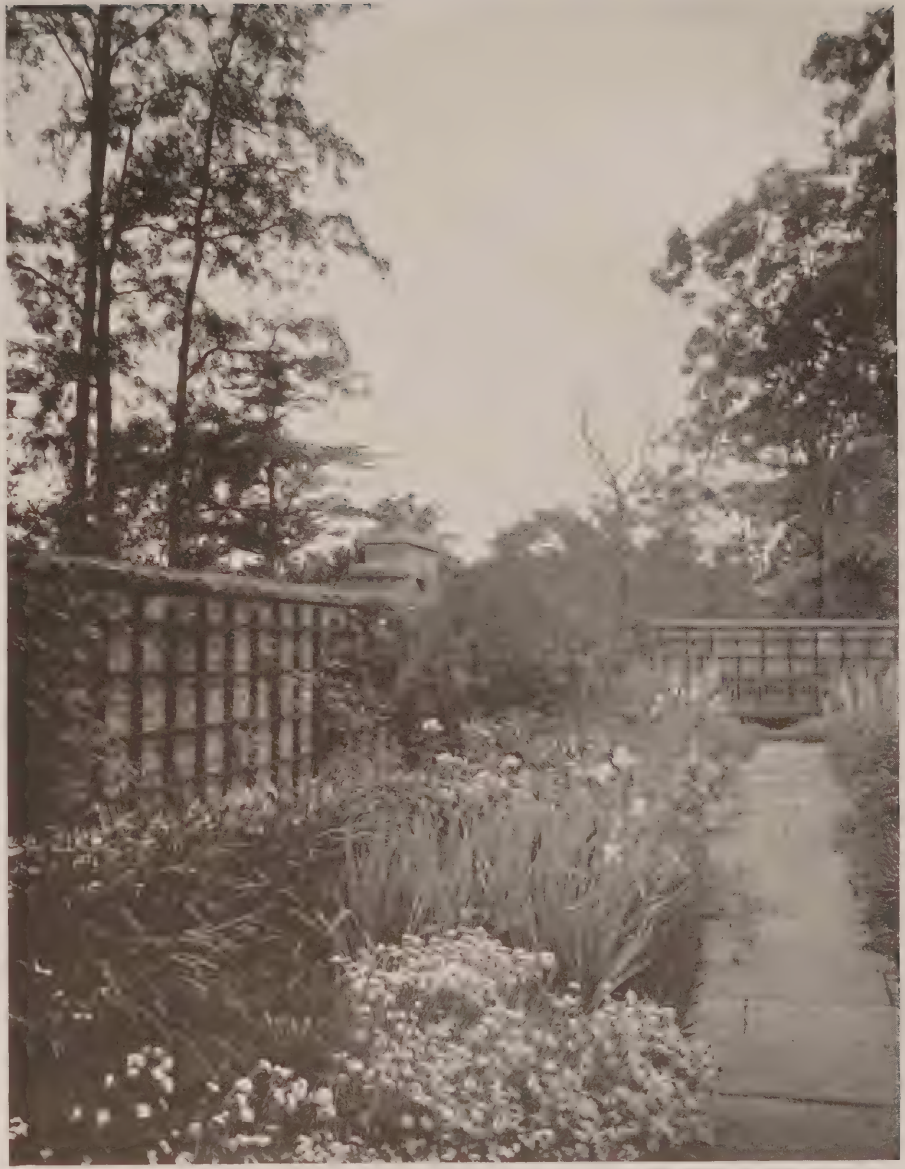
The resources of the landscape architect extend beyond garden design and screening unsightly views; he is able to increase the apparent size of an estate, for just as the architect sometimes employs various means for enlarging what seem to be the dimensions of a building or a room, the landscape architect by a judicious use of various levels, of trees and planting in various forms, of walls and terraces is able to perform miracles which add materially to the value of the property. The extent to which this can be done is not always realized until a particularly interesting solution of such a problem is seen, but there are many instances where small areas have been made to appear vastly larger by careful work upon the part of a landscape architect.

The relation between architecture and its landscape setting is extremely important if the building

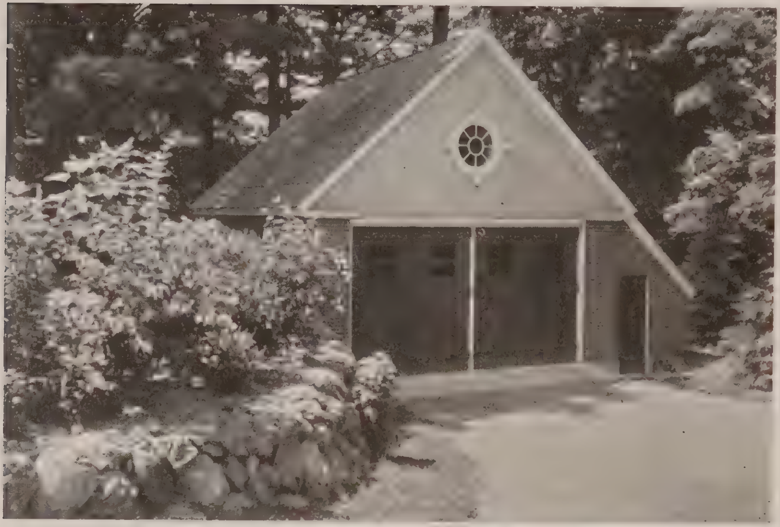
Flower bordered flag path
Garden of Mr. and Mrs. Arthur T. Murray, Springfield, Mass.
View taken during the second season of growth



CONTRAST OF STUCCO WALL AND FOLIAGE IN GARDEN OF JAMES C. BRADY
RUTH DEAN, LANDSCAPE ARCHITECT



FLAG PAVED WALK IN ENCLOSED GARDEN
BEATRIX FARRAND, LANDSCAPE ARCHITECT

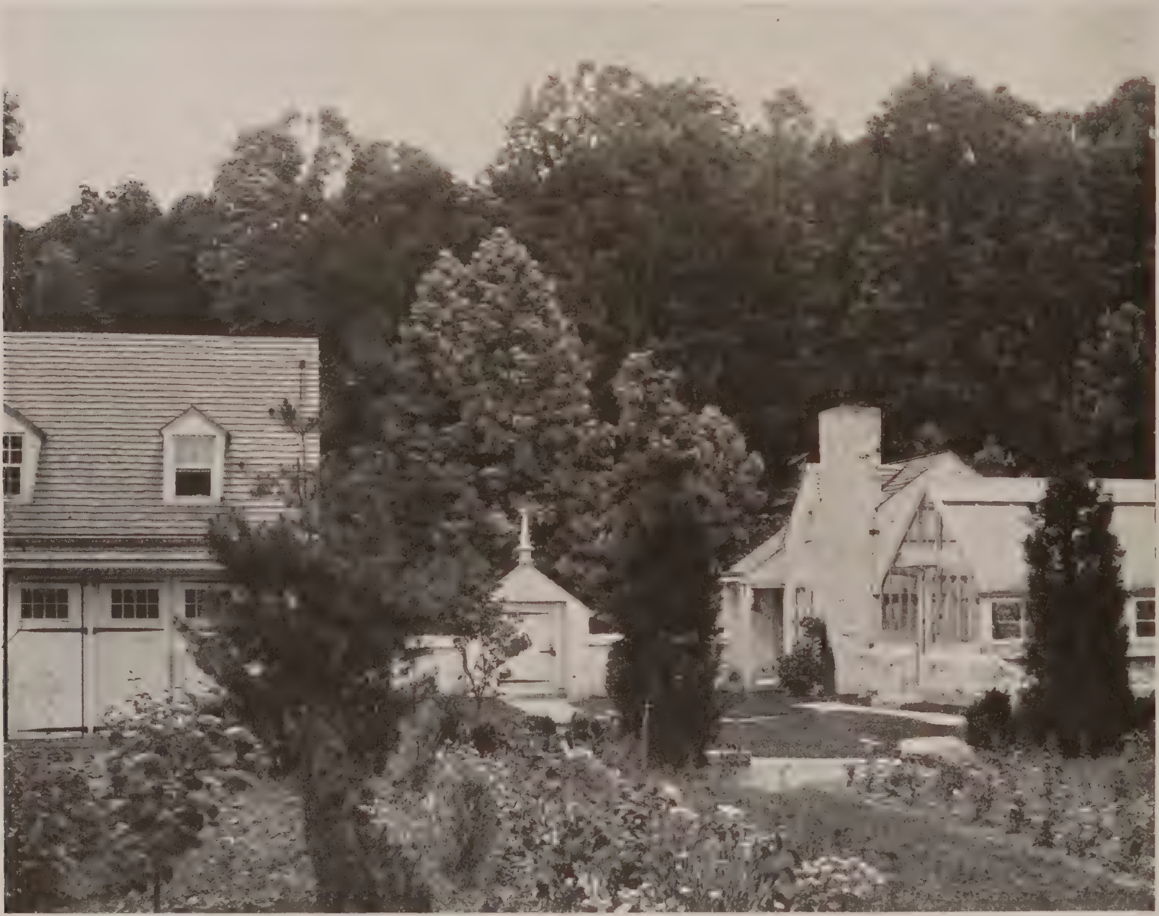


A small garage pleasantly masked with trees and shrubs
Estate of Theodore E. Jewell, Esq., Newton, Mass.
Ralph C. Henry, Architect

From the architect's viewpoint there is much to be gained through a broader understanding of this subject. A closer association between the professions of architecture and landscape architecture is highly desirable and promises mutual benefits which must develop from a sympathetic relationship toward a common end, —the creation of beauty.

There is another phase of this subject which we cannot pass over without brief and pointed consideration. Can the architect and the landscape architect work together in harmony? From time to time there are evidences of professional jealousy and real or fancied encroachments of professional service. Broad experience is proving that this condition is unnecessary, and that it is usually the result of misunderstanding and failure of mutual appreciation. Each has much to learn from the other, much of direct and actual benefit to the client, and real strength lies in a fairly allocated measure of professional co-operation in these interesting fields.

is to be seen at its best. The effect of a wall is immeasurably heightened by the play of light and shade cast by foliage. Even the proportions of a building may be improved by intelligent disposition of planting to correct architectural shortcomings.



Garage, Potting House and Greenhouse in Early Eighteenth Century Manner
Estate in Huntingdon Valley, Pa.
Carl A. Ziegler, Architect

Landscape Design for the Modern Country House

By ALFRED GEIFFERT, JR., F.A.S.L.A.

IN order to demonstrate the detailed considerations involved in properly landscaping a residential property, the development of a specific example has been selected, the estate of Myron C. Taylor, Esq., at Matinecock, New York, of which Richardson, Barott & Richardson are architects, and Vitale, Brinckerhoff & Geiffert the landscape architects.

Sufficient time has elapsed to allow the development of the complete design.—THE EDITOR.

EVEN as the architect confronts the problem of designing a dwelling conforming to certain expressed requirements of the client and consistent with good architectural practice and structural integrity, so the landscape designer must meet a dual requirement. He must so dispose the area involved as to afford all the required conveniences and necessities, arranged in reasonable juxtaposition and harmony of aspect with the whole and embellished to afford beauty. He calls on nature to aid in the accomplishment of his purposes. He deals in trees and shrubs and other variables, uncertain and subject to many hazards. But even as materialistic and utilitarian considerations of mechanical equipment, of space arrangement and of service, form the skeletons and nerve systems of buildings which constitute architectural works, so it is only upon a basis of sound engineering judgment and scientific study that a design may be built up for the ultimate creation of controlled natural beauty and harmony.

(G) Main Entrance to Estate of Myron C. Taylor, Esq.
Vitale, Brinckerhoff & Geiffert, Landscape Architects

Here will be found a brief, illustrated description of the landscape development and planting of the Myron C. Taylor estate which will serve to describe the various steps required of the landscape designer. In approaching a problem of this nature the first consideration is the assembling of survey data. By this is meant not only the topographical survey, but also data regarding other basic considerations and controlling factors, such as the requirements of the client, embodying the number and sizes of the buildings, the character of the neighborhood, and the directions in which lie the most important views, both desirable and undesirable. The topographical survey itself should include data regarding: levels, indicated by means of 1-foot contours and supplementary figures; locations of all structures, roads and walks, outlines of tree and shrub masses, and accurate locations of all isolated and the more important trees within the woodlands, with notes as to names and sizes; all water features, such as springs, streams or still water within and adjacent to the confines of the property; existing utilities, including water supply, drainage, electric lighting and sewage. All of this data should be assembled in graphic form together with photographs taken at strategic points on the property and its surroundings.

With the assemblage of such data it is possible to proceed with the studies for the layout intelligently and with a fair degree of assurance. The project should be studied not only on plans but also by means of sketches graphically rendered to test out and prove the imaginary pictures which are in the mind of the designer, but which cannot be adequately presented by means of plans alone, however well they are prepared.

Having consolidated in this manner the fundamentals of the layout, the house and the garage were in this instance tentatively staked out on the ground and the correctness of their placing finally tested. The other requirements stipulated were the locations of the flower garden, tennis courts and orchard, and any other features the topography of the property might suggest to further enhance its beauty, with of course the necessary roads and paths making the features accessible. With the house and the garage located, the road system was the next problem at hand. It was solved by having two units, a

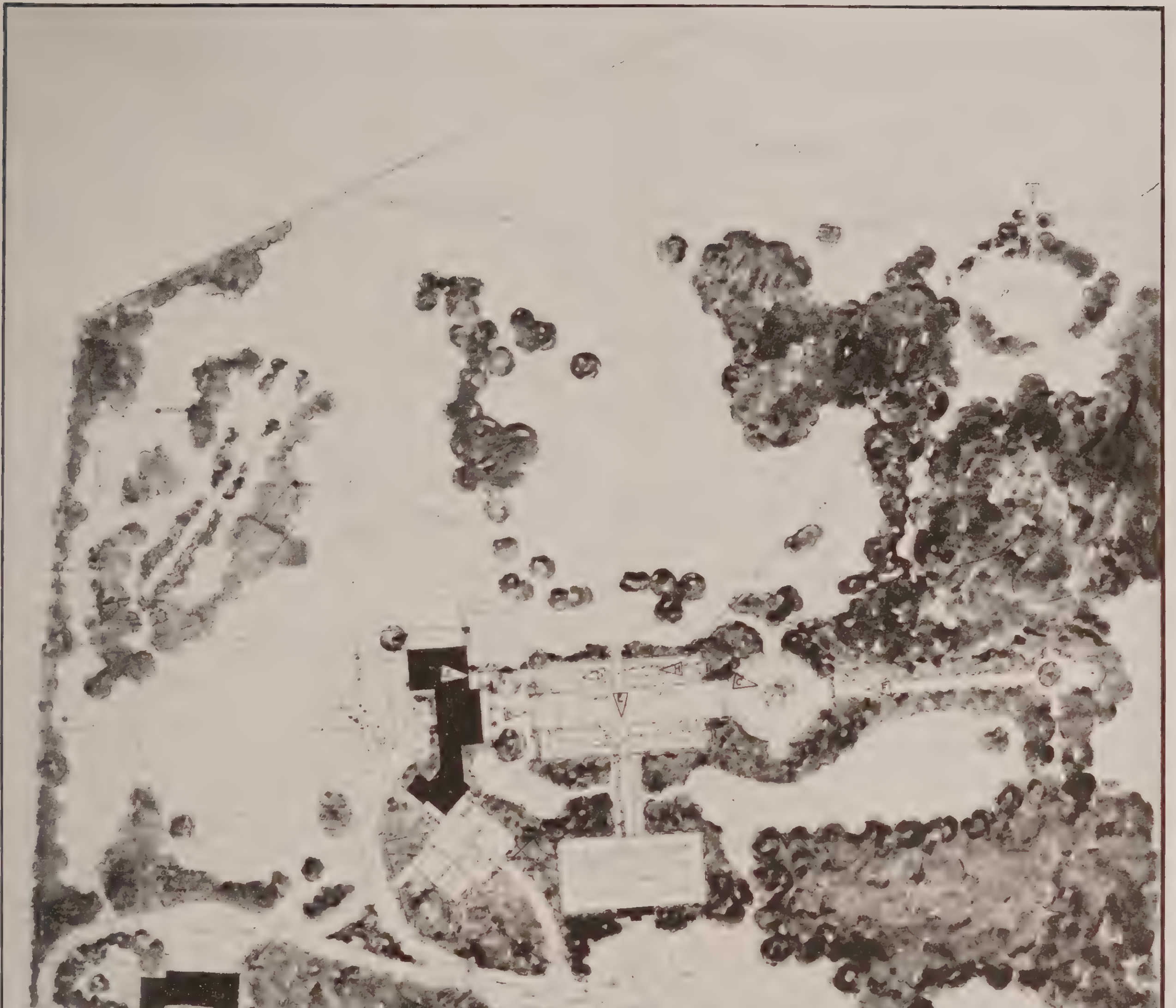
Transportation and Setting of Large Trees on Myron C. Taylor Estate

private and a service approach, each with a separate entrance. At first it was questioned whether it was advisable to have the private road parallel the highway, as shown on the general plan, because of their proximity, but by the planting of heavy masses of trees and shrubs the desired visual separation was obtained. The most obvious solution of this entrance road problem was, of course, to approach the house directly from the highway over the shortest route. This however would quite evidently destroy the element of privacy, the preservation of which was very necessary in the solution of this problem. The entrance therefore was placed at a point farther south on the highway, and the location of the roadway so devised as to lead toward the house in a reasonably direct and natural manner. This made possible the control of certain views to be seen as one approaches the house, views which are charming in effect and suggest the general atmosphere and character of the place, quite desirable whenever such control and indication are possible in developing a country estate.

(C) View in Circular Garden Showing Humanizing Effect of Bringing an Old Cedar Tree into the Picture

In studying the immediate surroundings of the house site the existing conditions to a large extent directed the disposal and form of the features adopted. To the east of the house a broad meadow extended to the pond, with an interesting view of a stone bridge separating the pond from the bay beyond. As this was the only distant, as well as the only water view, the intervening area was developed into a lawn with no obstructions of any kind, in fact, several trees were removed to improve the view. To the south the ground dropped gradually to a level about 7 feet below the first floor of the house, then rose again to a little mound having a locust grove upon it. This topographical condition presented an ideal situation for a terrace at the house, with a walled garden in the hollow, leading up by means of steps at the southern end to a circular evergreen garden, backed by the locust grove.

The location of the tennis court was in the same way determined by a level area to the west of the flower garden and connected with it by a stepping stone walk, and terminated by a lattice structure at the west side of the court, so placed as to give shelter from the sun's rays and also to afford a point of observation. In the center of the structure an arch was constructed to frame the view across the court and garden to the pond beyond. A delightful view


GENERAL PLAN FOR THE ESTATE OF
MYRON C. TAYLOR ESQ.
AT MATINECOCK, LONG ISLAND, NY
VITALE, BRINCKERHOFF & GEIFFERT - LANDSCAPE ARCHITECTS
527 FIFTH AVE NYC
SCALE — 1" = 40
NORTH

GENERAL PLAN OF ESTATE OF MYRON C. TAYLOR, ESQ., MATINECOCK, N. Y.

The letters enclosed in triangles indicate positions from which photographs bearing corresponding letters and illustrating the text were taken

VITALE, BRINCKERHOFF & GEIFFERT, LANDSCAPE ARCHITECTS is thus provided from the road as one walks or drives by, a view which adds much to the estate.

To the west, this being the direction of the service wing of the house, were located the service court and drying yard, well screened from the areas beyond by planting. On the north the land sloped very gradually to the northern boundary of the property. This area was developed as a circular lawn and enclosed by means of heavy planting. The area to the east of the entrance court was unobstructed by planting, and was the meeting place of the north and east lawns. This made possible a splendid view of the bridge and vista as one approaches the front of the house. The remainder of the property was planted with groups of trees and shrubs in a naturalistic way, and at two points interest was centered by developing existing water features.

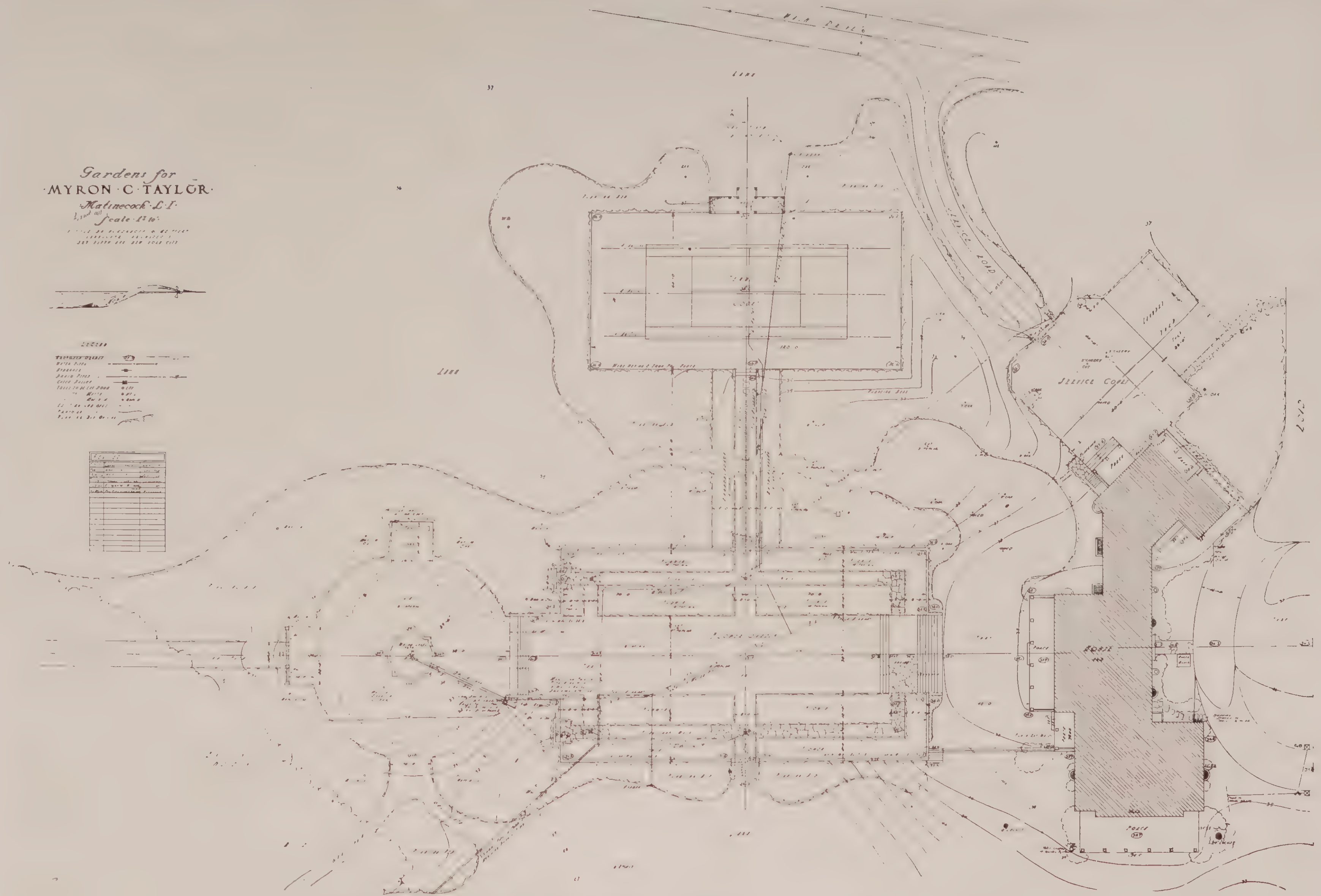
Now began the making of the working drawings, first the grading plans and those of the road system, with its profiles and cross sections; then followed plans of the water system showing the location of the well, the directions and sizes of pipes with their valves and outlets, the lighting system from the highway, with light standards along the road at intervals to the house and garage, the sewage disposal field, and the drainage system designed to take the rainwater from the house and garden areas to the pond beyond. Finally came the construction plans for the terrace walls, garden walls, steps, circular garden pool, tennis court and shelter, entrance gates, etc. Page 145 shows the working plan for the area about the house.

The planting plans were made after careful study of existing vegetation on the grounds, and the principle of enhancing the value of what already existed by adding sparingly was followed. It should be noted that comparatively few varieties of shrubs and trees were used and that these were largely of native material. The planting on the property might be divided thus: (a) naturalistic planting of a park-like nature, for general effect; (b) screens and enclosures of gardens and utilitarian units; (c) intimate planting of flowers and shrubs in the gardens and about the house. As to evergreens and deciduous plants, about half and half were used. This insures a pleasing effect throughout the year. The planting plans of a work of this nature show by outlines the number and sizes of plants to be used in specific places. The name of the plant is given within the outline.

A separate plan was prepared for the flower

(B) Garden Site under Construction

(B) View of Garden from the House the Season after Completion
Estate of Myron C. Taylor, Esq., Matinecock, N. Y.



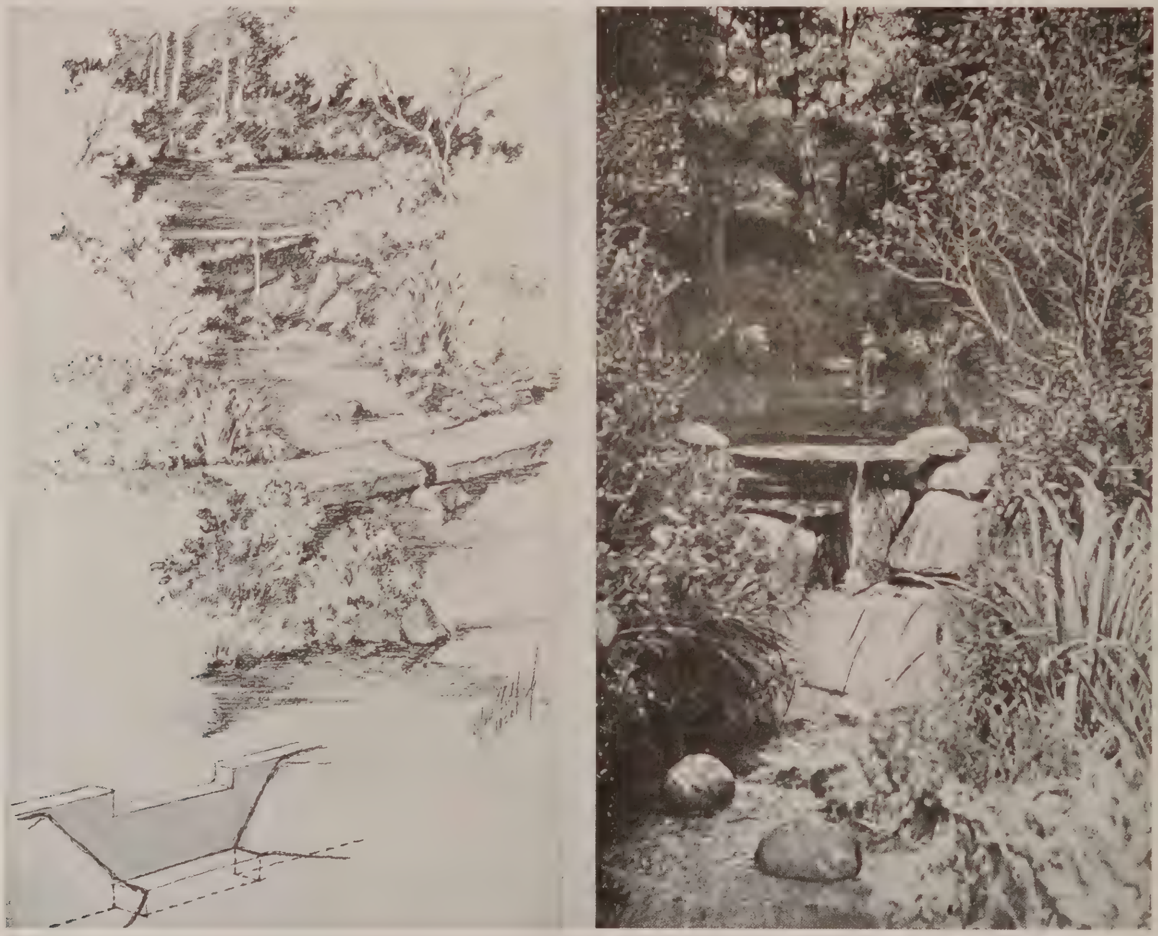
REPRODUCTION OF WORKING DRAWING FOR GARDEN LAYOUT IN VICINITY OF HOUSE
ESTATE OF MYRON C. TAYLOR, ESQ., MATINECOCK, N. Y.
VITALE, BRINCKERHOFF & GEIFFERT, LANDSCAPE ARCHITECTS

garden, in the designing of which the surroundings were carefully considered and a succession of flowers throughout the blooming season assured. The areas of grass form no small part of the planting, and careful study of existing conditions, proper preparation of the soil and careful selection of the seed were necessary to insure a fine lawn.

With the completion of the working drawings and specifications and the letting of contracts came the real test of the success of the undertaking. Real charm and character depend largely on the personal touch and judgment of the designer. In the location of the planting pockets in steps and walls, the making of a pattern in an irregularly flagged walk, in the altering of a curve of the road, and in many other similar details the landscape architect's presence on the ground proved to be valuable and helpful. It should be borne in mind that the creation of a pleasing landscape depends almost entirely on careful and conscientious supervision on the grounds, the paper design or chart being utilized only as a guide.

The illustrations accompanying this article are snapshots of views from various points on the property, indicated by letters enclosed in triangles on the general plan. It is interesting to note here that the period of construction lasted one year, and that the charm and apparent maturity were made possible by using large trees and shrubs from the outset. Even in the creation of the orchard large trees of from 8 to 10 inches in diameter were used.

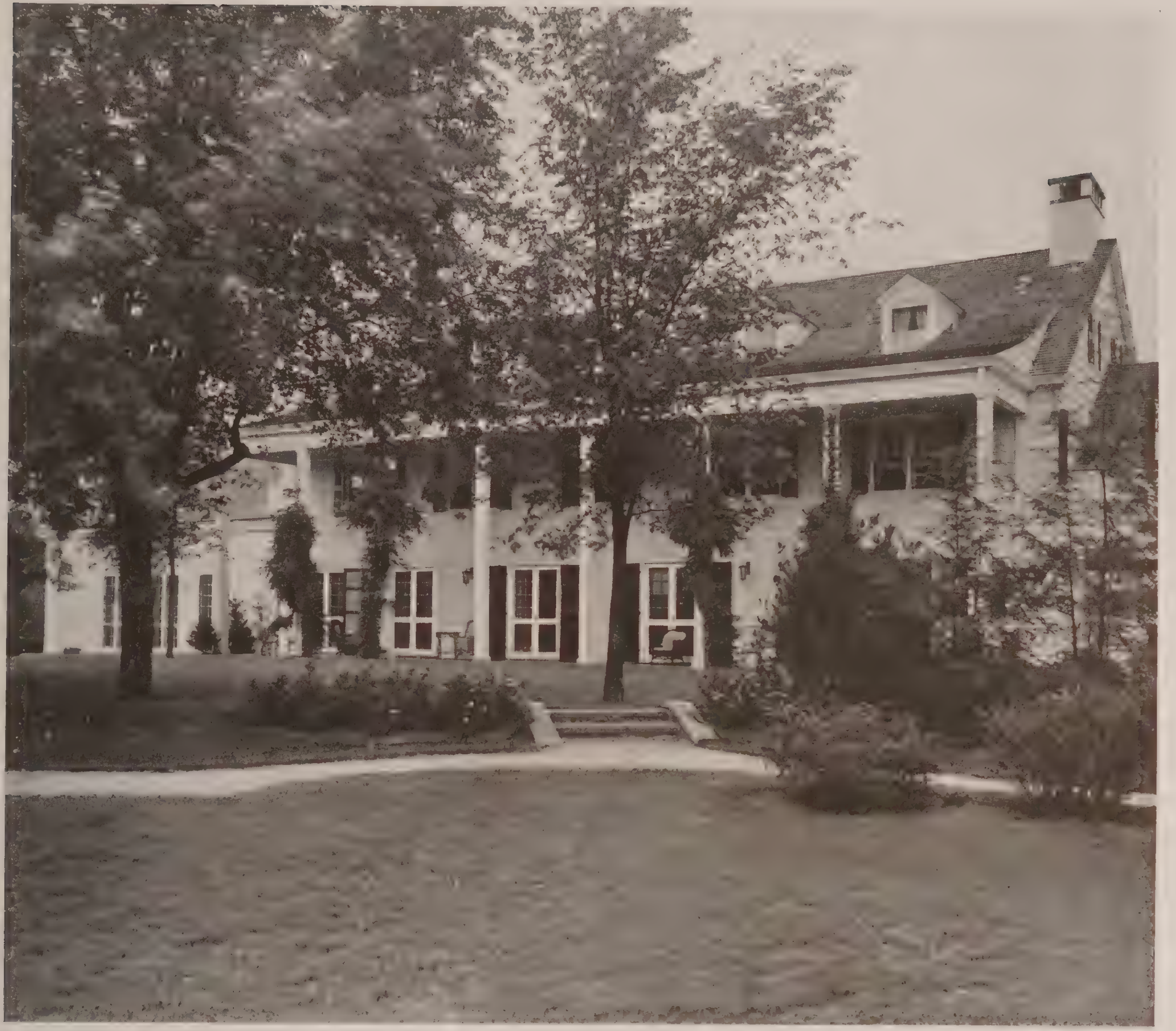
During the period of construction the responsibility for maintenance falls within the scope of the landscape architect. After the work is finished it becomes the duty of the superintendent to assume this responsibility. Efficient maintenance is most important in assuring constant charm and beauty of composition. Proper watering, cultivating, pruning, mulching and thinning out of crowded plants are all items of maintenance essential to the artistic well-being of the place, and sympathetic co-operation on the part of the owner is the final and all-important requisite of success.



Original Study

Completed Work

(I) View of Pool, Showing the Charm of a Water Feature even though Created and Controlled

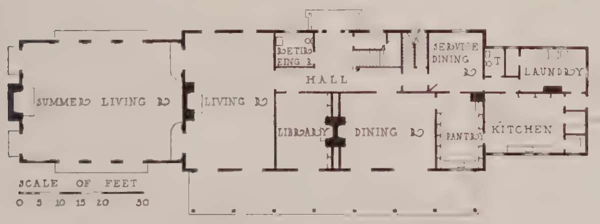


Photos by M. E. Hewitt Studio

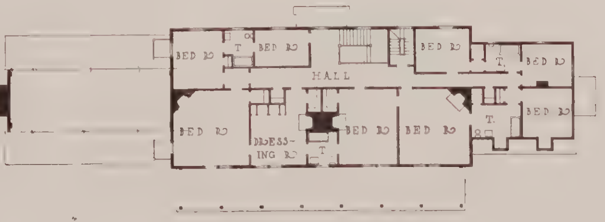
HOUSE OF MRS. ROBERT L. AHLES, WESTBURY, N. Y.
DANIEL D. MERRILL, ARCHITECT

THIS house in its present aspect represents alterations and additions to a building which already existed. The house is of frame construction, hand-split shingles being laid over sheathing and building paper. These hand-hewn shingles and the brick chimneys have been given an old-fashioned whitewashed appearance, the shingles upon the roof having been allowed to weather. Where shutters or blinds have been used they are painted black. Interior trim and floors generally are of whitewood and quartered oak, the summer living room having trim of walnut and floor of brown Welsh tile. Walls in this room are of rough plaster finish, the other rooms of the main floor being painted and those of the upper floors papered. Heating equipment provides for use of a two-pipe steam system.

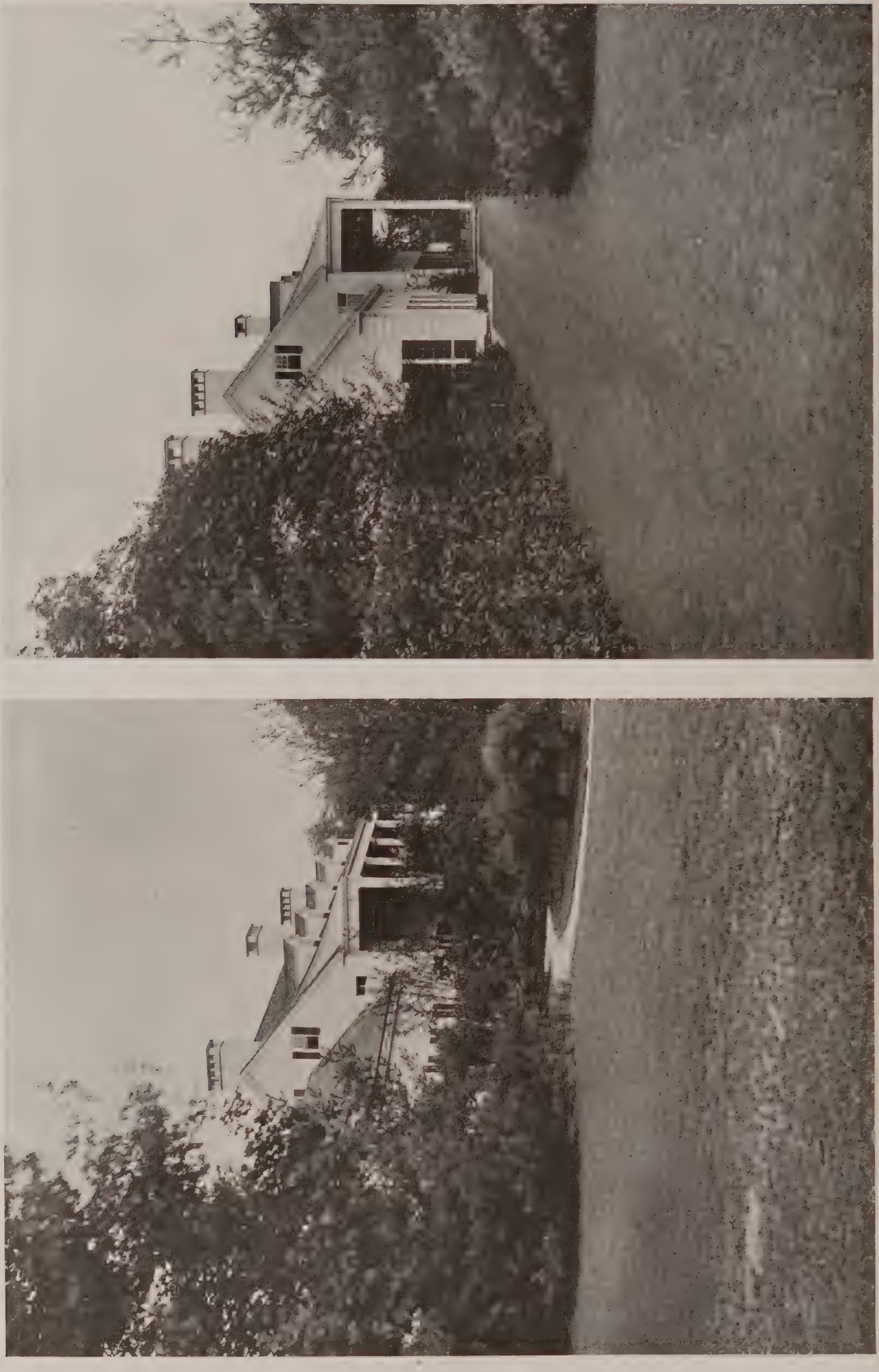
Since the house is not a new building, cost prices are difficult to compile. The original building and the alterations average 60 cents per cubic foot. The contract for the alterations was awarded in September, 1920, and was completed in July, 1921.



FIRST FLOOR PLAN



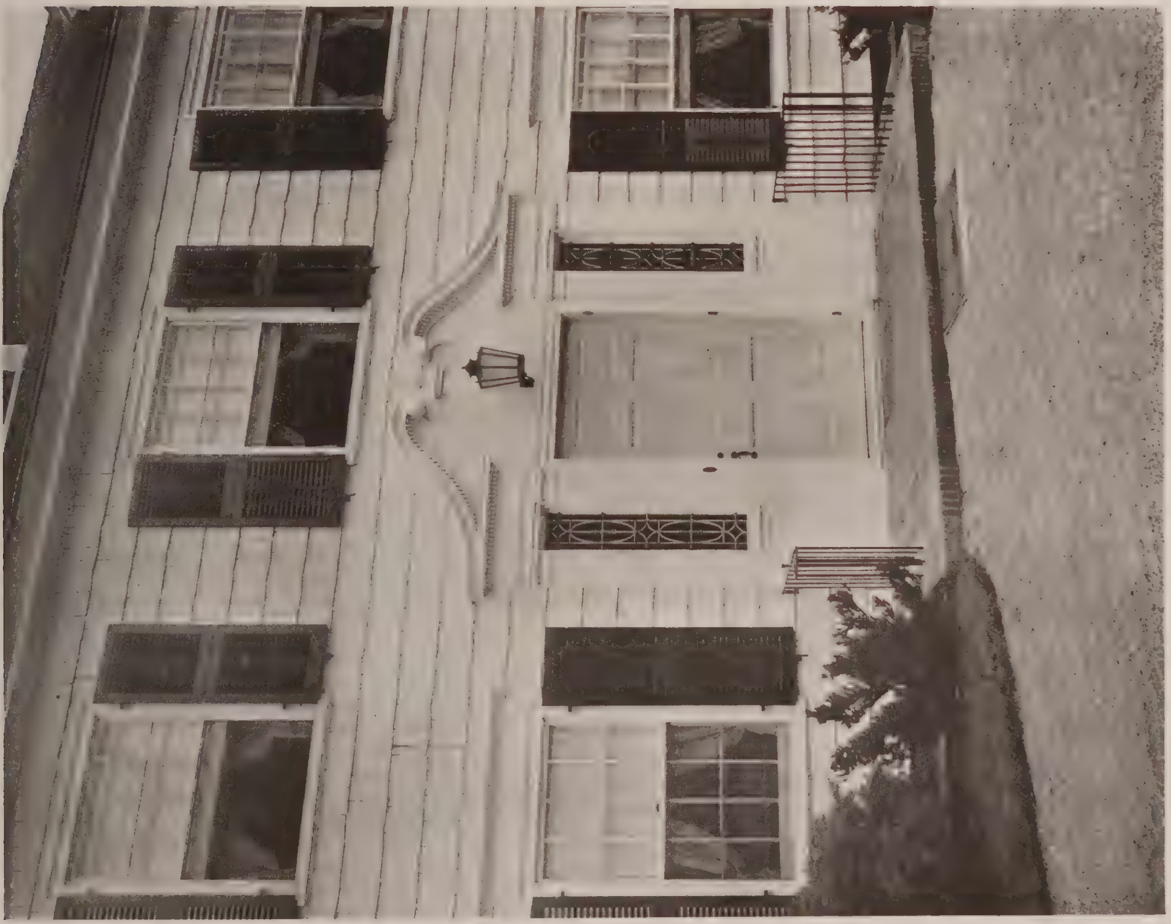
SECOND FLOOR PLAN



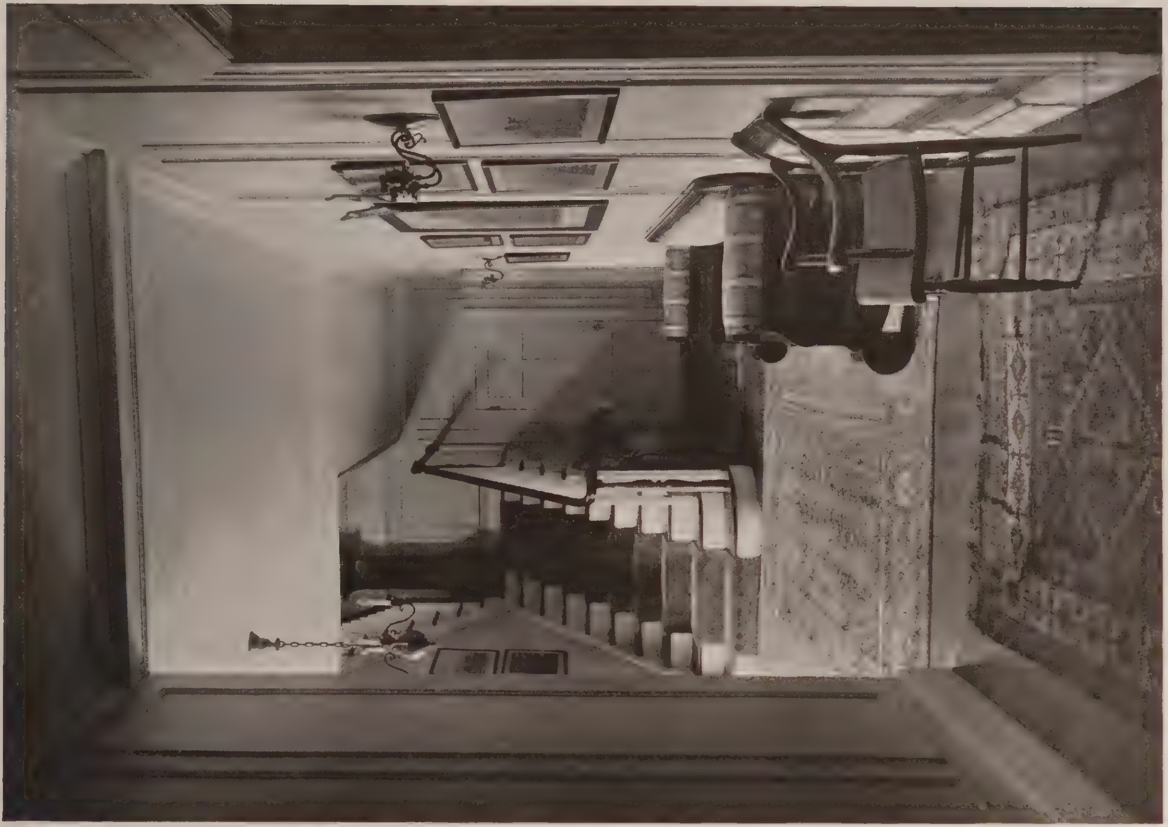
TWO GENERAL VIEWS SHOWING ARRANGEMENT OF PLANTING ABOUT HOUSE

HOUSE OF MRS. ROBERT L. AHLES, WESTBURY, N. Y.

DANIEL D. MERRILL, ARCHITECT



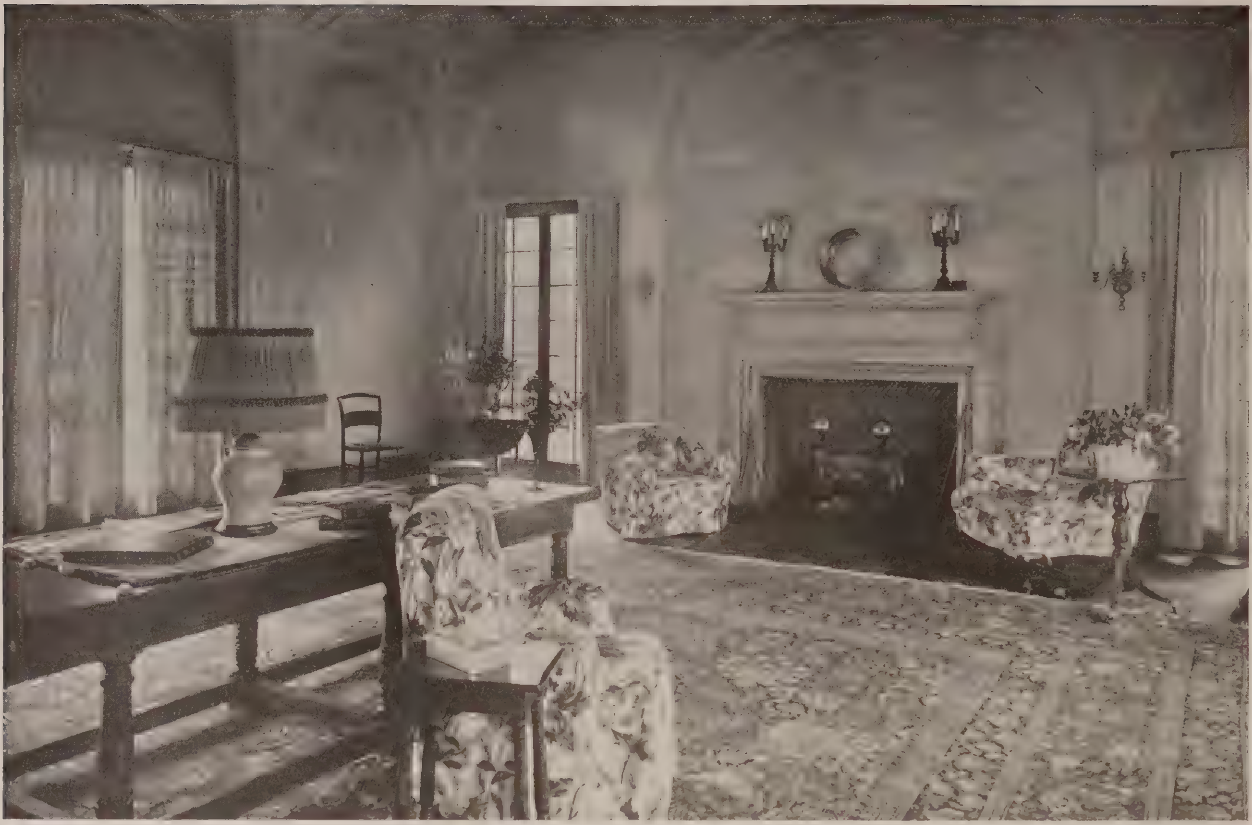
DETAIL OF ENTRANCE



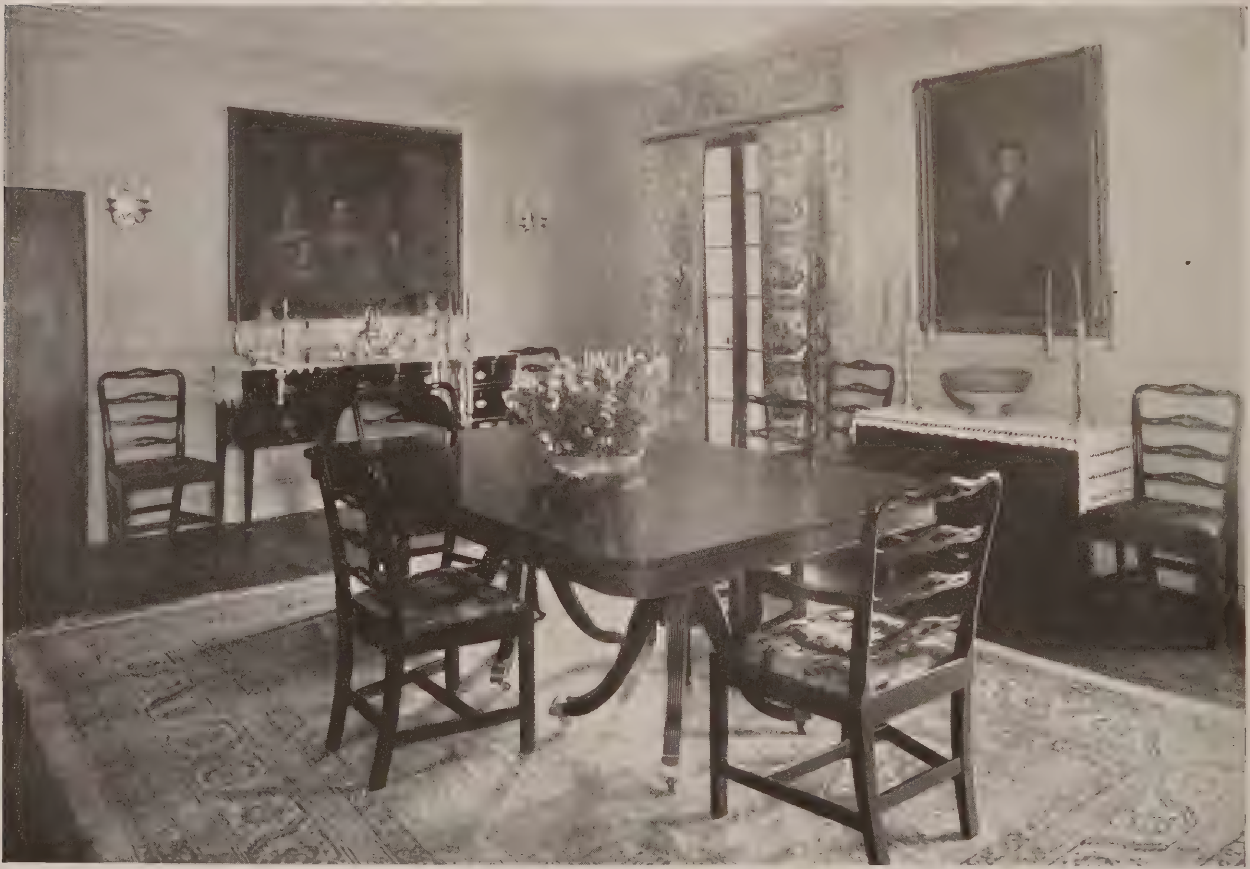
ENTRANCE HALL

HOUSE OF MRS. ROBERT L. AHLES, WESTBURY, N. Y.

DANIEL D. MERRILL, ARCHITECT



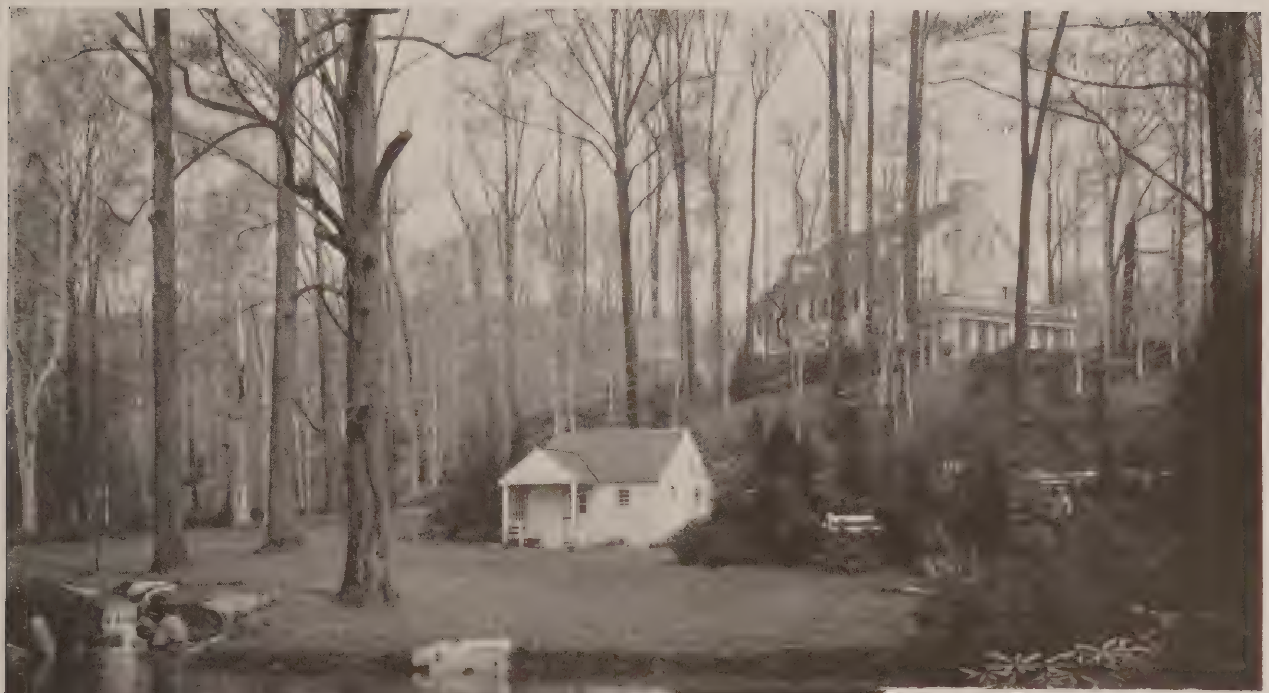
SUMMER LIVING ROOM

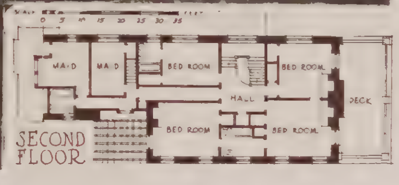


DINING ROOM

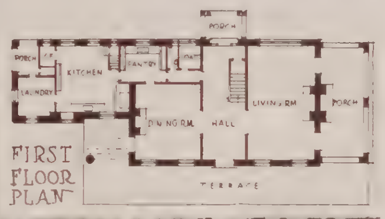
HOUSE OF MRS. ROBERT L. AHLES, WESTBURY, N. Y.

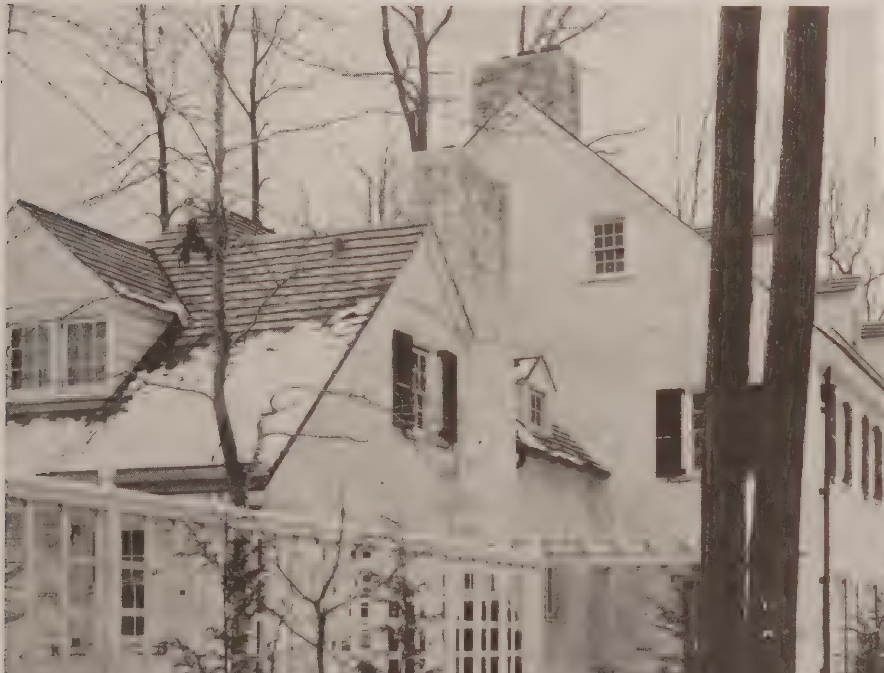
DANIEL D. MERRILL, ARCHITECT





VIEW OF HOUSE FROM BOG GARDEN

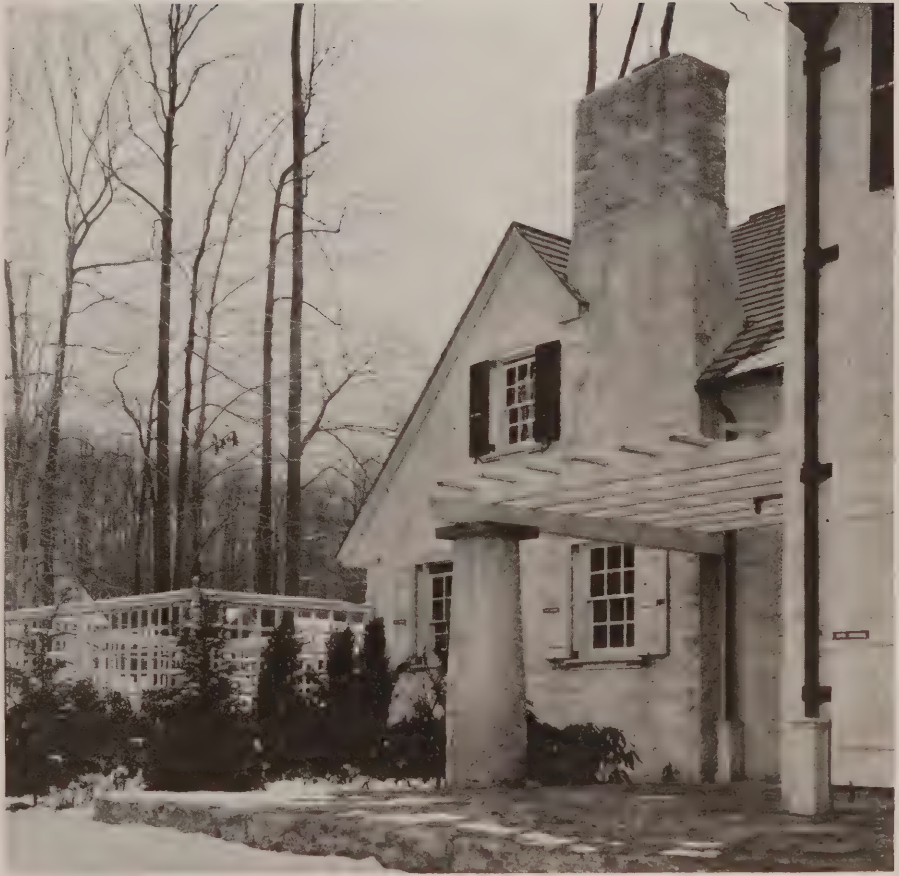




GENERAL VIEW OF TERRACE SIDE

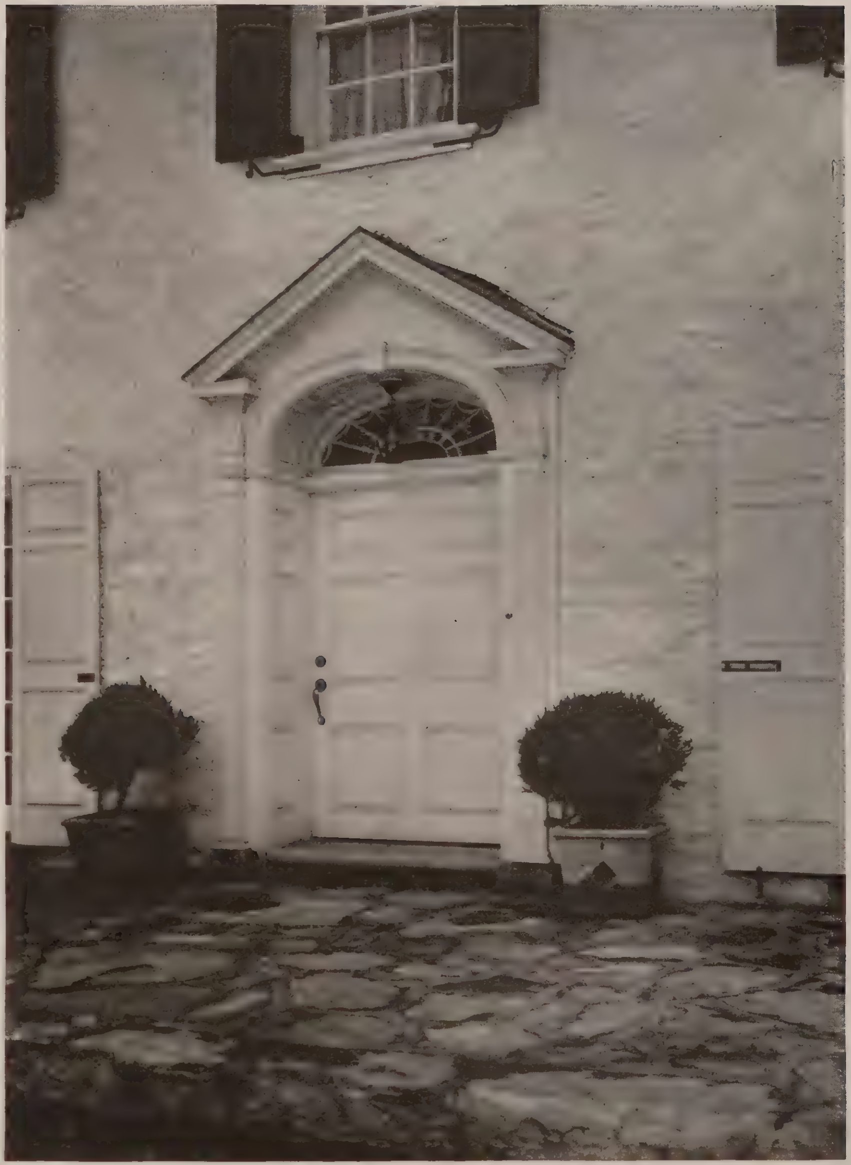
HOUSE IN HUNTINGDON VALLEY, PA.

CARL A. ZIEGLER, ARCHITECT



PORCH AND SERVICE WING

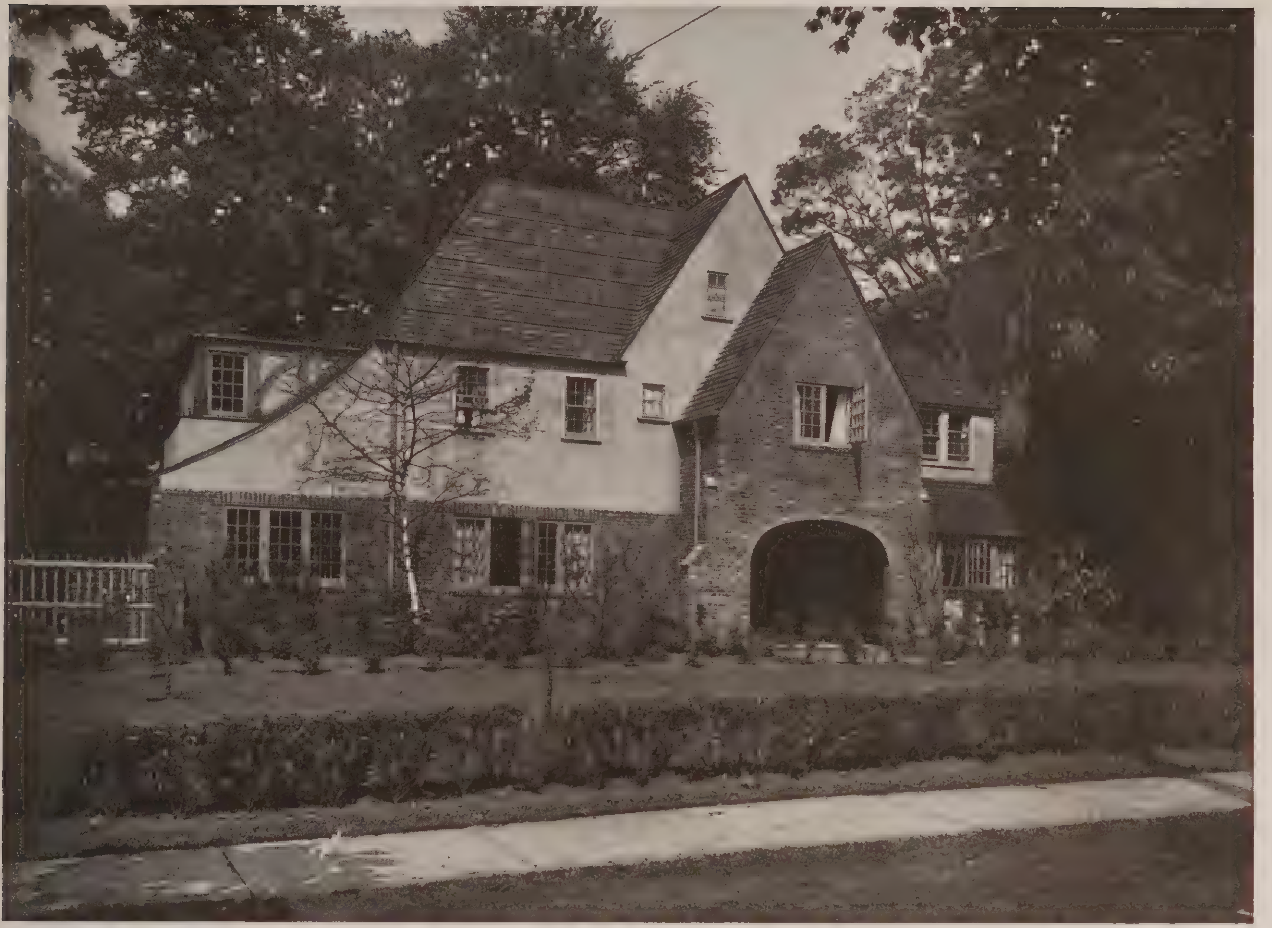
THE location of this house on a 2-acre plot was difficult to determine because of the steep grade down to a stream. This was finally made the predominant feature by building a "bog garden" in the hollow with tanbark ramps up to the terrace. The house is built of stone, the joints filled with gravel mortar to give texture, and the whole coated with whitewash. The roof is of heavy split shingles, permitted to weather without stain. The terrace is paved with flat local stones and at one corner is glazed in winter. The house is several years old; costs consequently have no application.



DETAIL OF TERRACE ENTRANCE

HOUSE IN HUNTINGDON VALLEY, PA.

CARL A. ZIEGLER, ARCHITECT

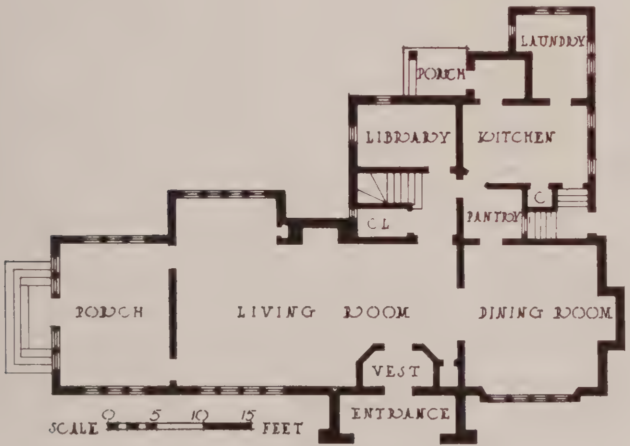


Photos by John Wallace Gillies

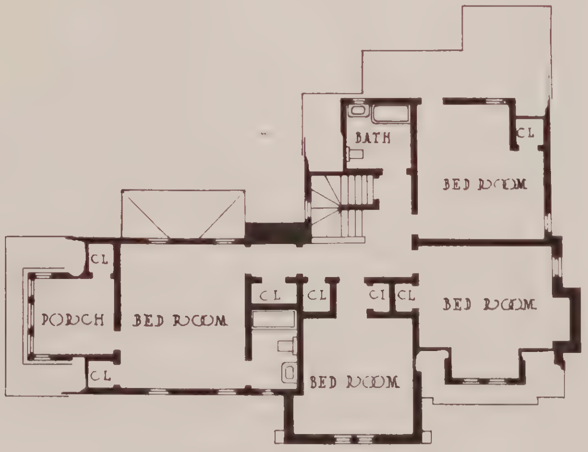
HOUSE AT PELHAM MANOR, N. Y.
W. H. ORCHARD, ARCHITECT AND OWNER

MUCH of the interest of this house is due to use of old brick laid in cement mortar without lime and regardless of the accepted bonds for brickwork. Walls of the upper floor are frame and metal lath covered with three coats of cement mortar; inner walls are cement mortar on metal lath.

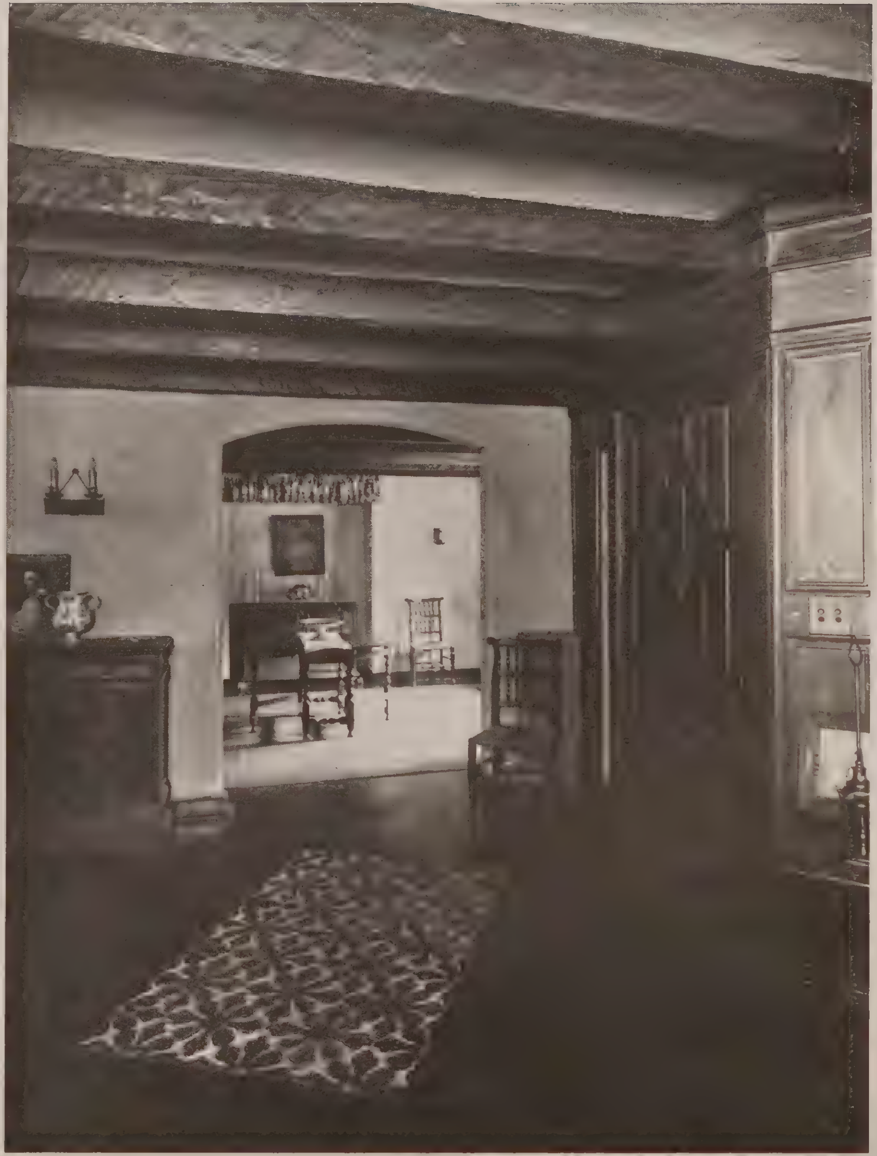
First story floors are of wide oak boards stained dark walnut and treated with high gloss varnish. No door or window trim is used, and the 3-inch base merges with the floor by reason of its similar finish. Doors are built up with $1\frac{1}{8}$ x 6 boards, with top, bottom and diagonal battens secured to uprights with hand-made iron nails having large heads. Ceiling beams are of spruce, 4 x 10, hand dressed. Hardware is of wrought iron finished black, and lighting fixtures of wrought iron rust finished. Floors of second floor are of pine; walls and woodwork painted putty color. The house is heated by steam, and a gas hot water heater is installed. Windows are wood casements.



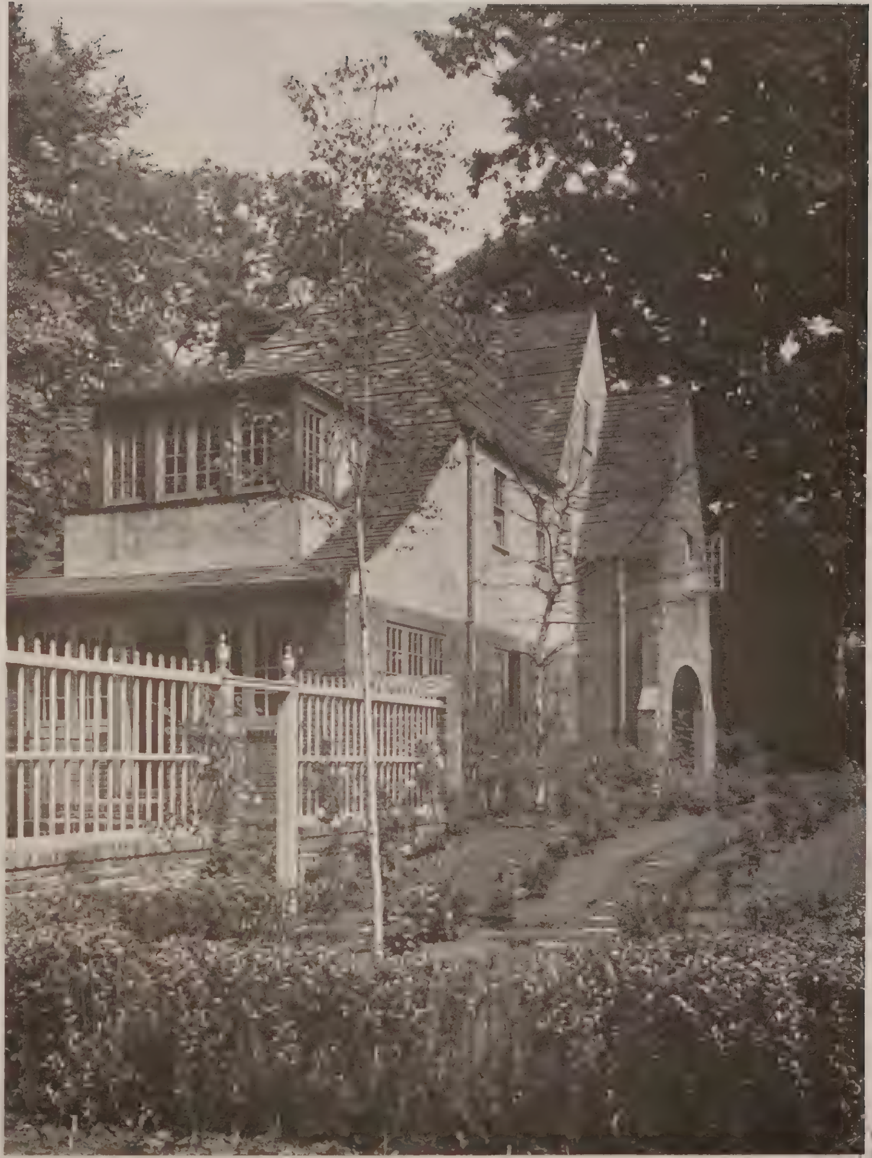
FIRST FLOOR PLAN



SECOND FLOOR PLAN



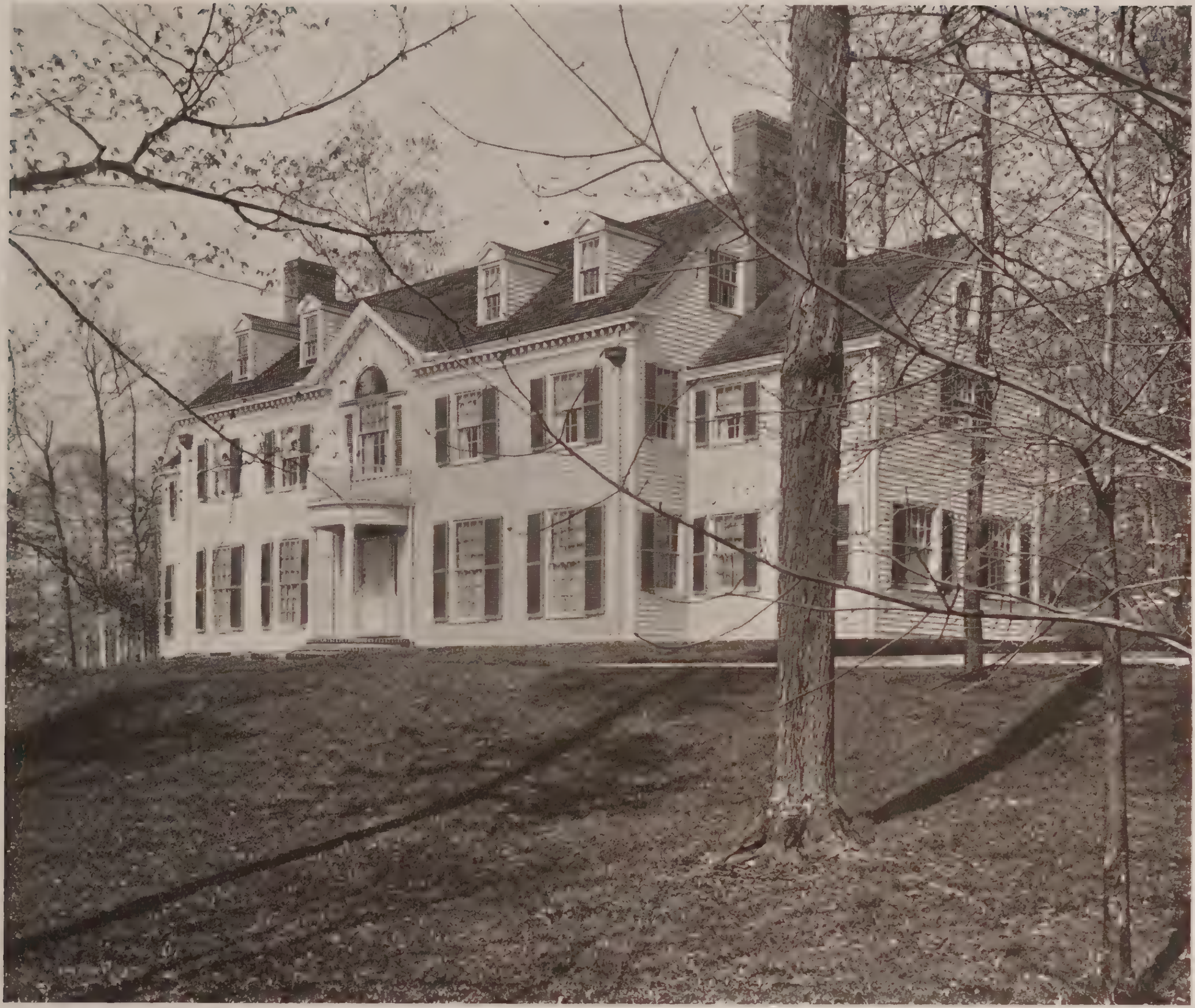
VIEW TOWARD DINING ROOM FROM ENTRANCE



FRONT VIEW OF HOUSE FROM THE GARDEN

HOUSE AT PELHAM MANOR, N. Y.

W. H. ORCHARD, ARCHITECT AND OWNER

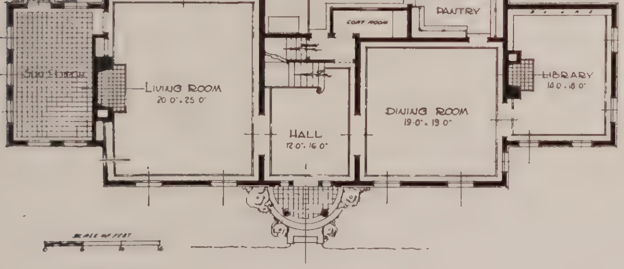


HOUSE OF K. B. C. SMITH, ESQ., TENAFLY, N. J.

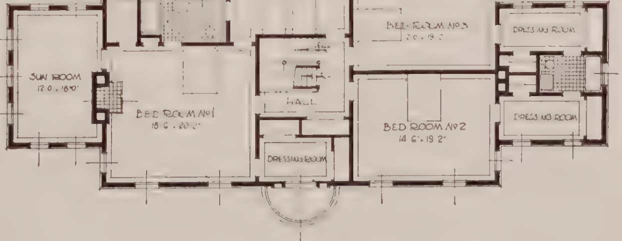
R. C. HUNTER & BRO., ARCHITECTS

THIS house exhibits in its design the precise character of late eighteenth century work in New England. The exterior is of white pine siding with corner boards. The cornice and Palladian window indicate the studied detail of later colonial woodwork. The roofs are covered with shingles stained brown, the side walls and trim painted colonial buff, and the window blinds, olive green. Chimneys are generous masses of red brick.

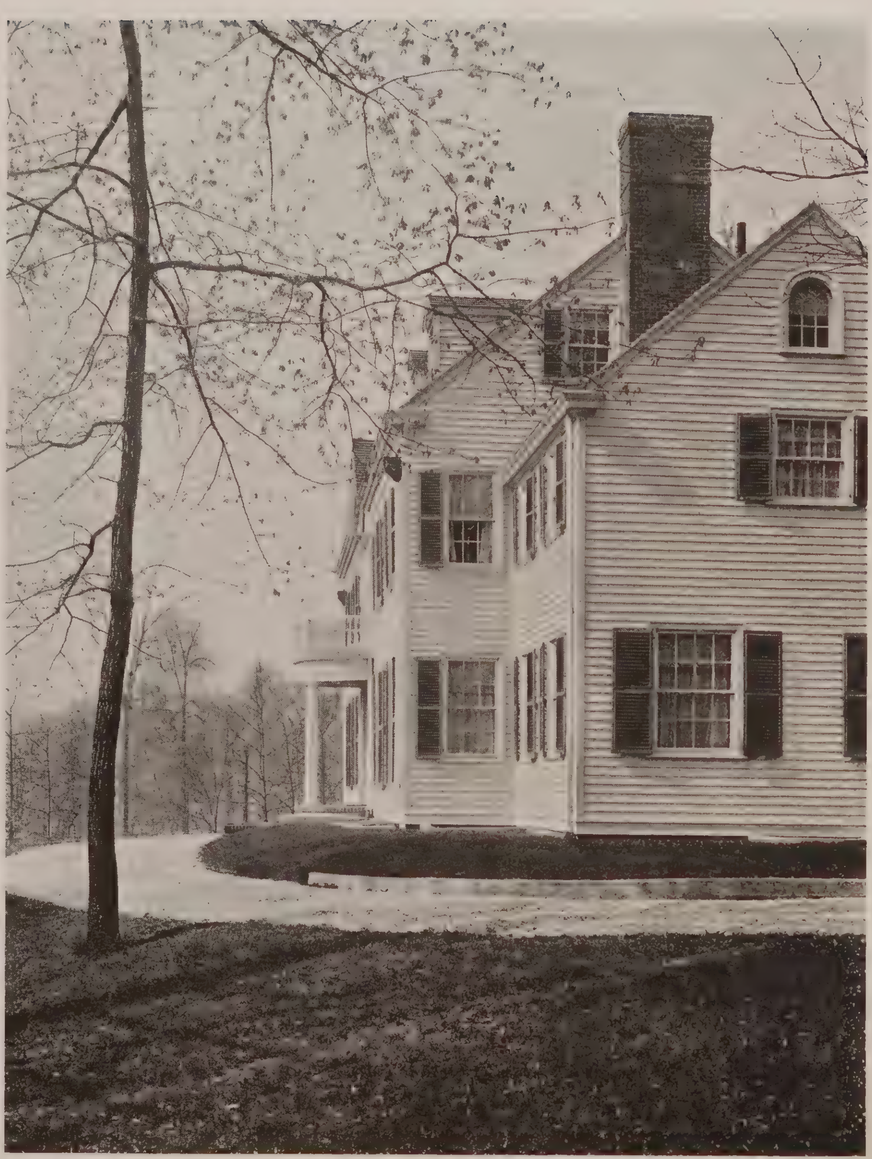
The interior finish is of white pine, enameled white in eggshell gloss; floors are of white oak. The walls of the principal rooms have colonial dadoes with paper above or they are paneled with applied mouldings and painted. Heating is supplied by a steam system. The third floor contains two servants' rooms and bath. The contract for construction was let in March, 1918, and the cost was 40 cents per cubic foot.



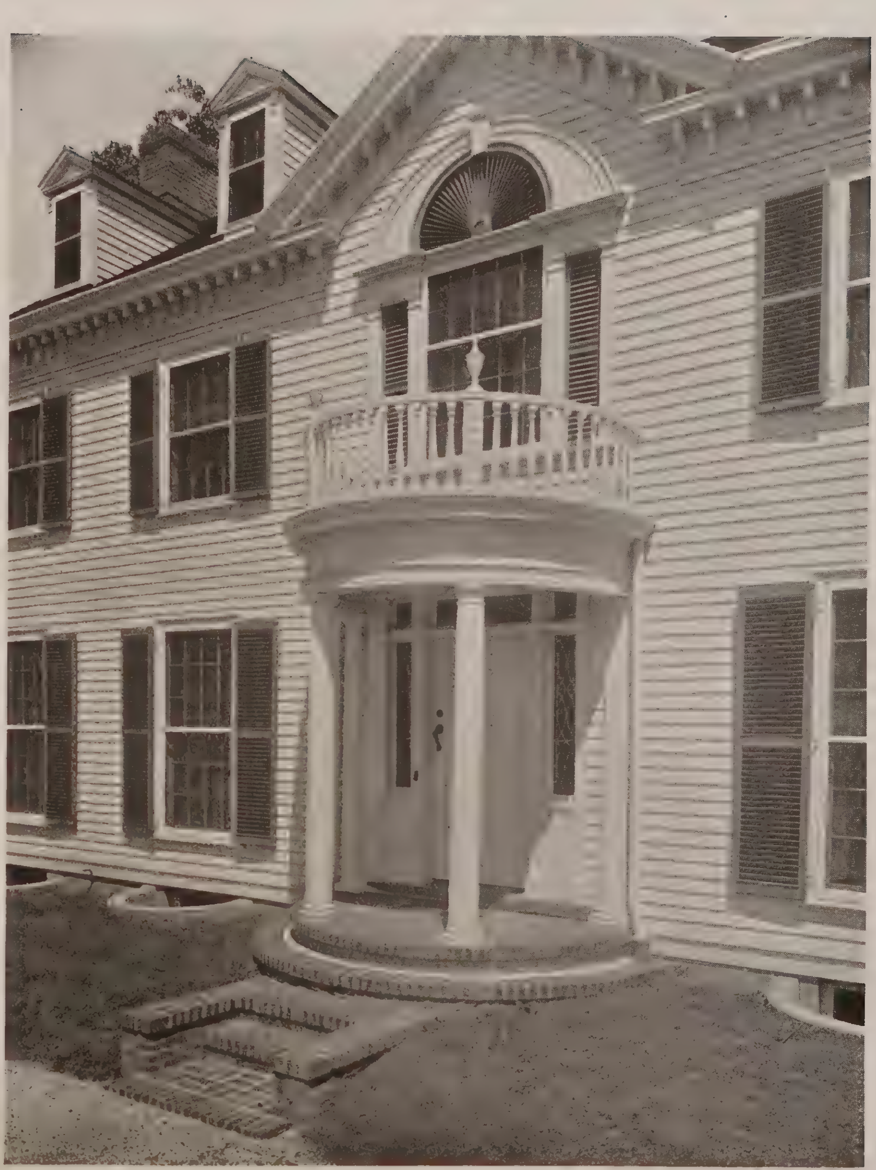
FIRST FLOOR PLAN



SECOND FLOOR PLAN



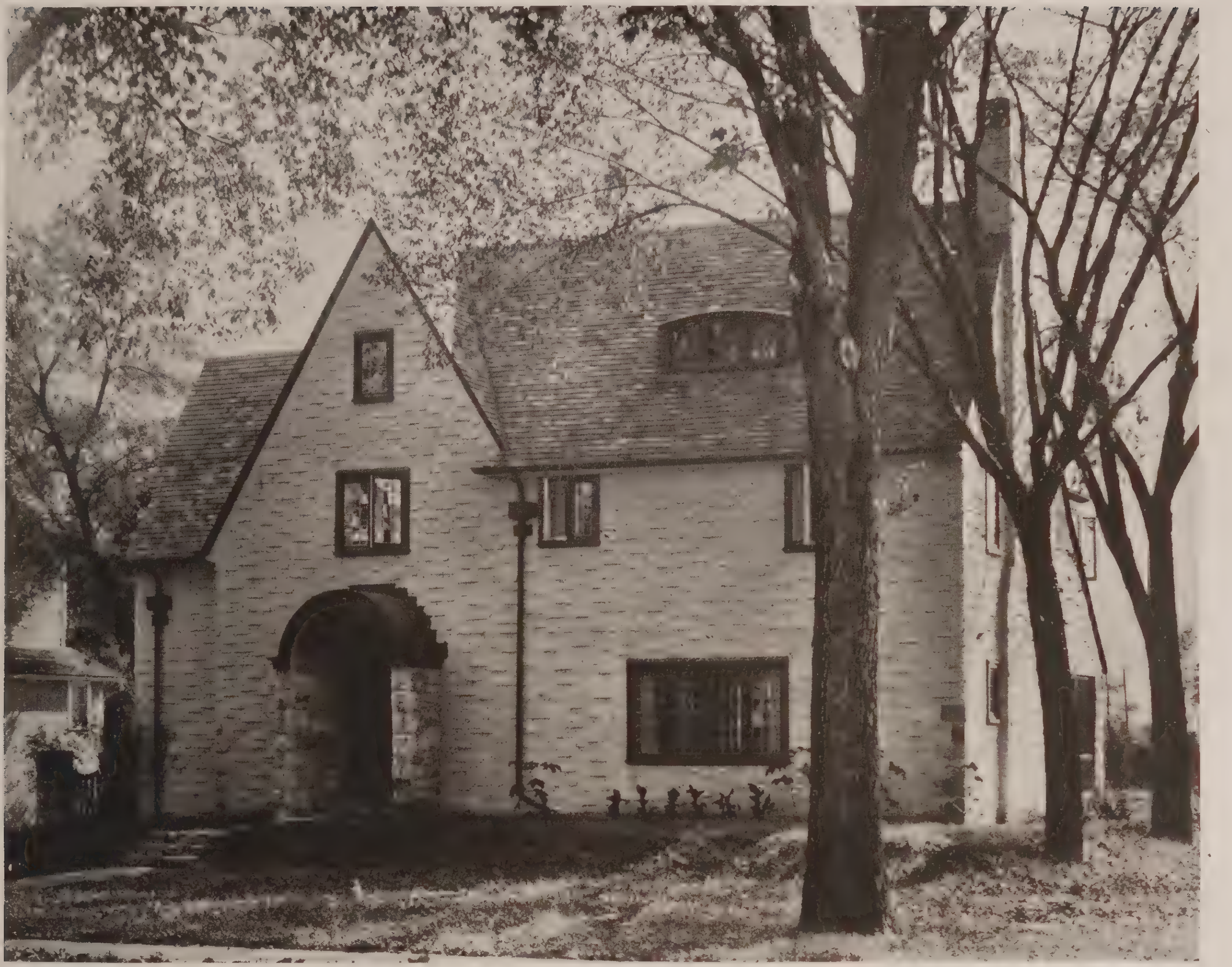
END VIEW FROM APPROACH



DETAIL OF ENTRANCE FRONT

HOUSE OF K. B. C. SMITH, ESQ., TENAFLY, N. J.

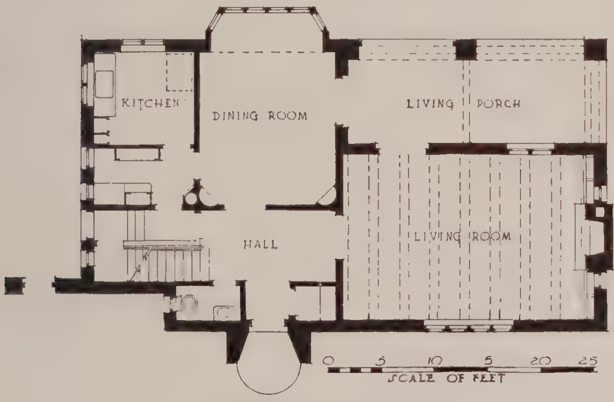
R. C. HUNTER & BRO., ARCHITECTS



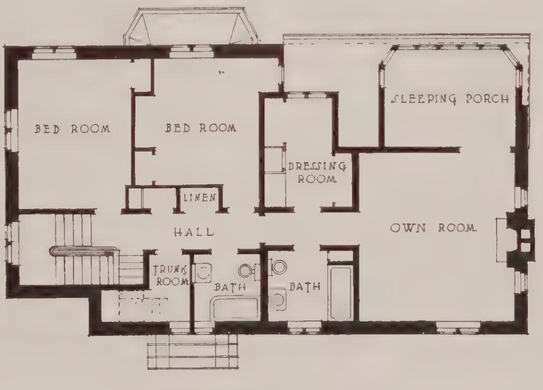
Photos by Henry Fuermann & Son

HOUSE OF CHARLES L. COBB, ESQ., HINSDALE, ILL.
LOWE & BOLLENBACHER, ARCHITECTS; FRANK L. VENNING, ASSOCIATE

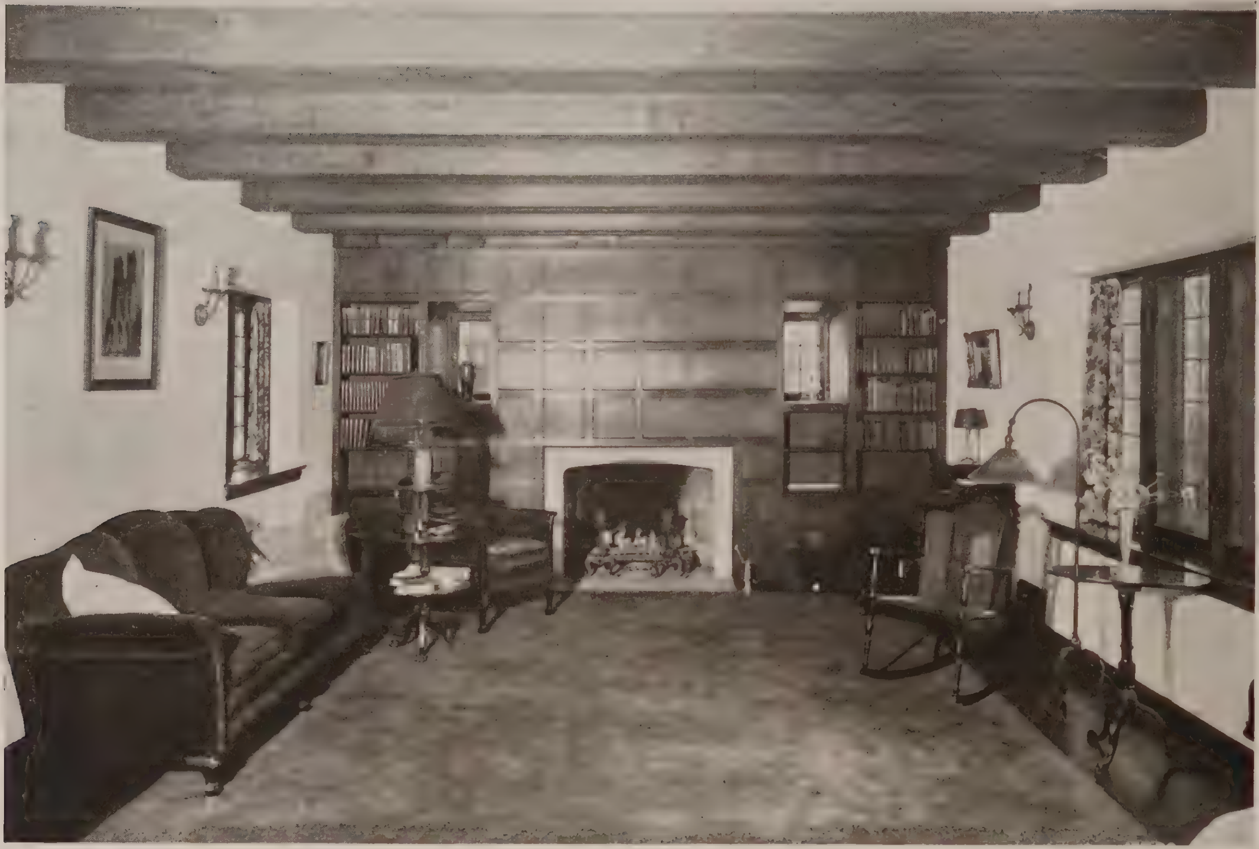
THIS house shows an interesting use of an inexpensive material to produce color and texture. The walls are of Chicago common brick with stretchers here and there bulging slightly from the face of the wall; the brick surfaces are coated with a stain of whitewash effect to secure attractive color and strong shadows. The roof is covered with stained shingles. The windows are wood casements with leaded panes. The interior is finished simply with rough plaster walls, there being no wood trim to the windows except a small moulding at the junction of sash and plaster jamb; a bull nose metal corner bead is used at all angles. The floor of the sleeping porch is canvas and of the main porch cement. The house was contracted for in July, 1921, and cost approximately $14,000.



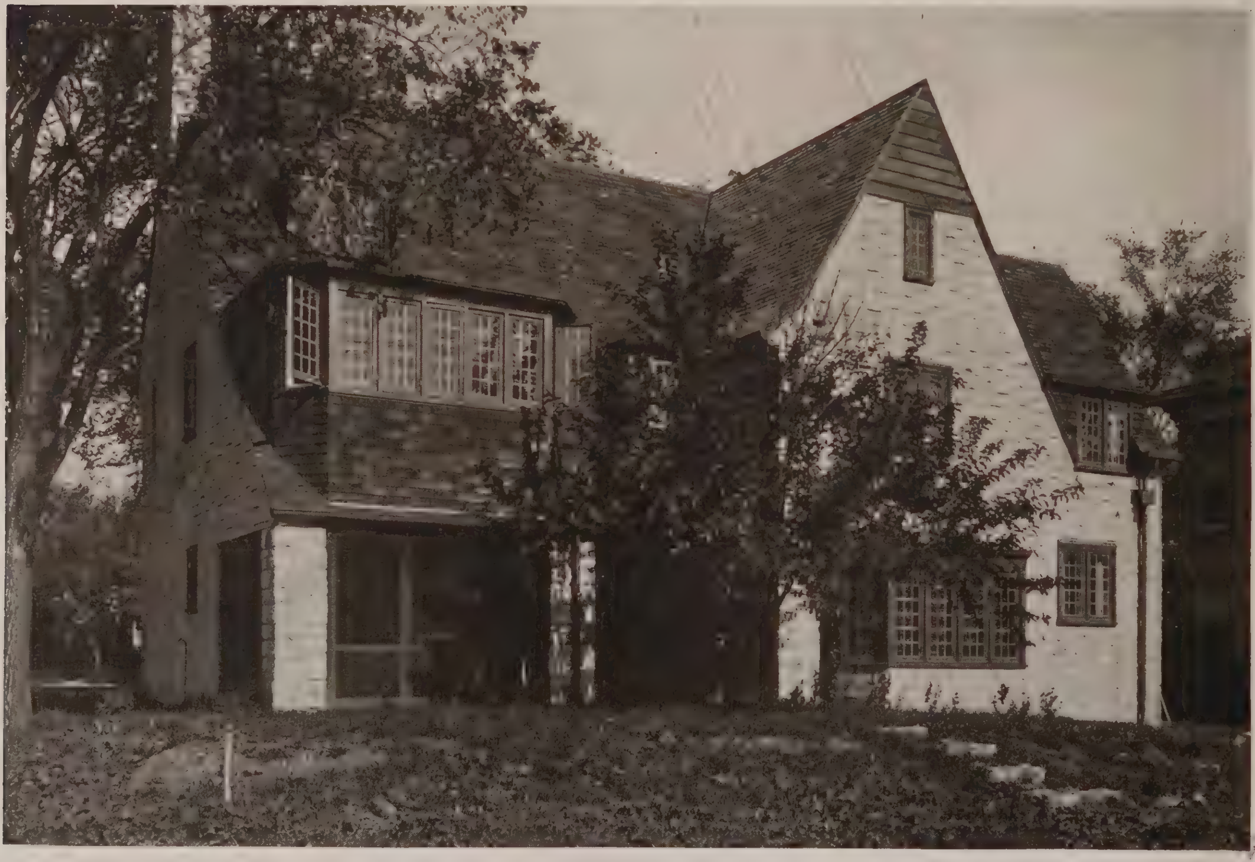
FIRST FLOOR PLAN



SECOND FLOOR PLAN



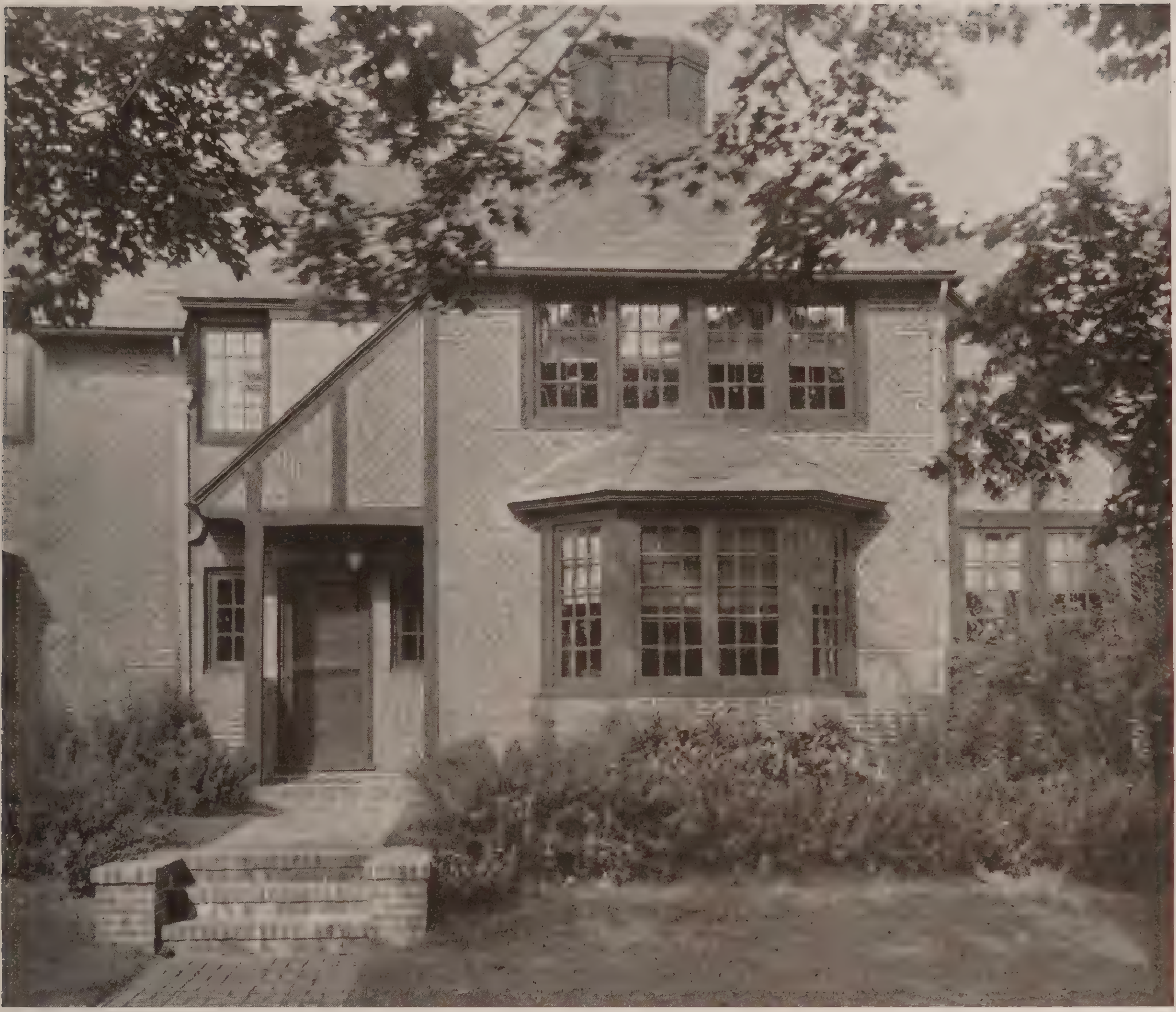
LIVING ROOM



GARDEN SIDE

HOUSE OF CHARLES L. COBB, ESQ., HINSDALE, ILL.

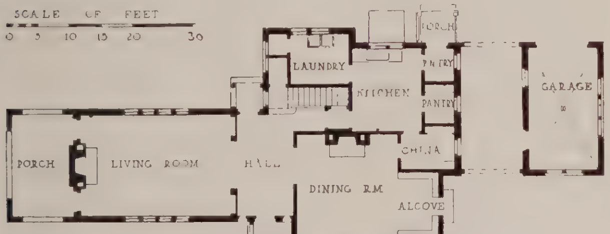
LOWE & BOLLENBACHER, ARCHITECTS; FRANK L. VENNING, ASSOCIATE



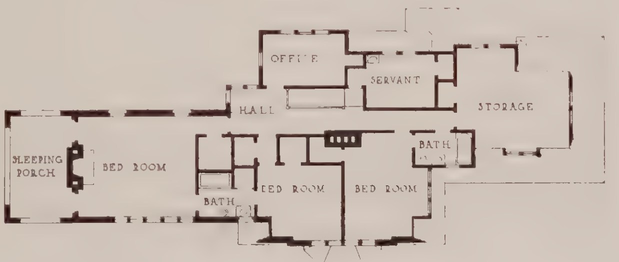
Photos by Thomas H. Ellison

HOUSE OF F. L. RICHARDSON, ESQ., NEWTON, MASS.
FRANK CHOUTEAU BROWN, ARCHITECT

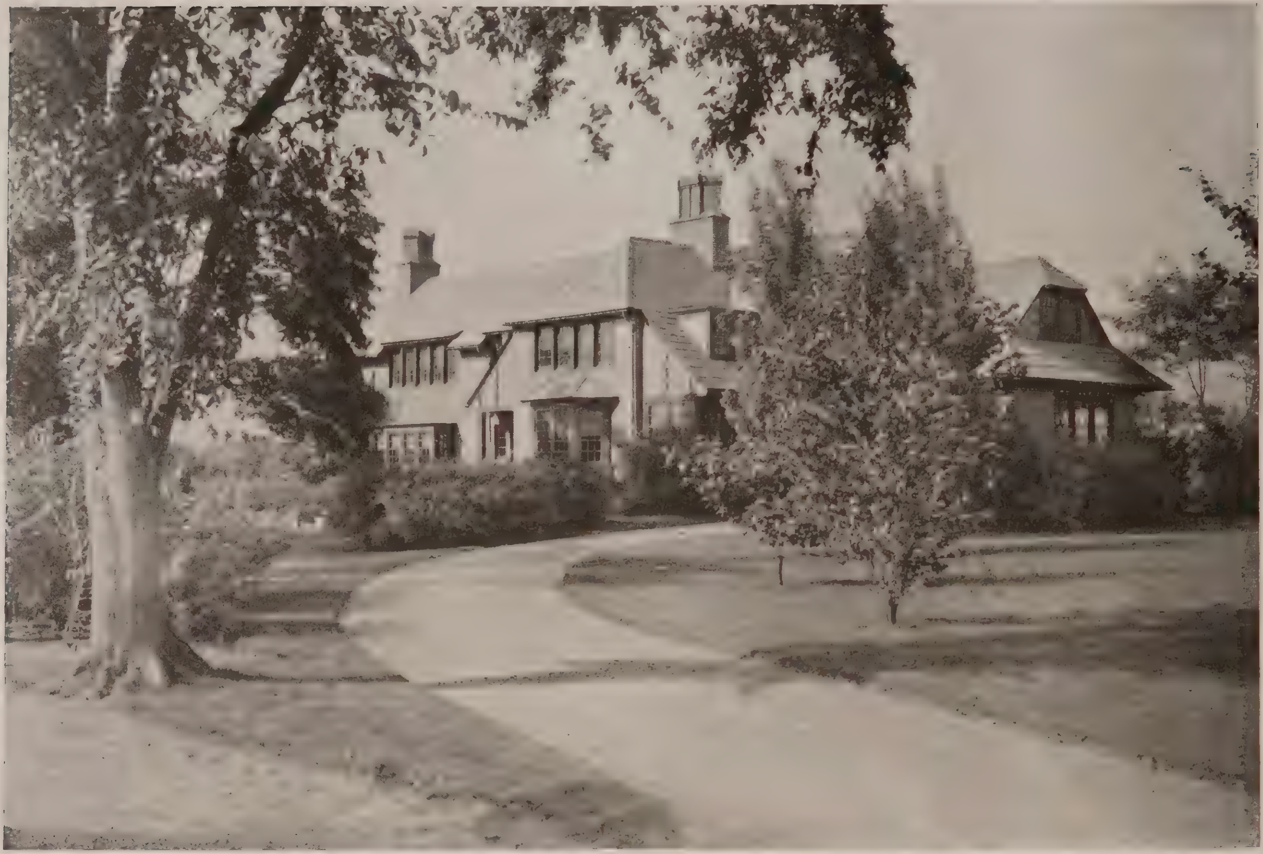
AN elongated, rambling plan is admirably expressed in this house of simple English cottage lines. The walls are frame with a veneer of waterstruck brick, relieved here and there by half-timber work and simple brick patterns. The exterior woodwork is cypress, and windows are wood casements. The roof is covered with slate laid in graduated courses. The interior walls are sand finished plaster with ash trim and quartered oak floors on the first floor, and painted whitewood trim and sap oak floors on the second floor. The garage is incorporated as part of the house design, but the driveway which actually separates it on the ground floor fulfills code requirements as to minimum distance from a dwelling. The ceiling of the garage is wire lath and cement plaster and the walls of solid brick. The house was built in 1915 at an approximate cost of $15,000.



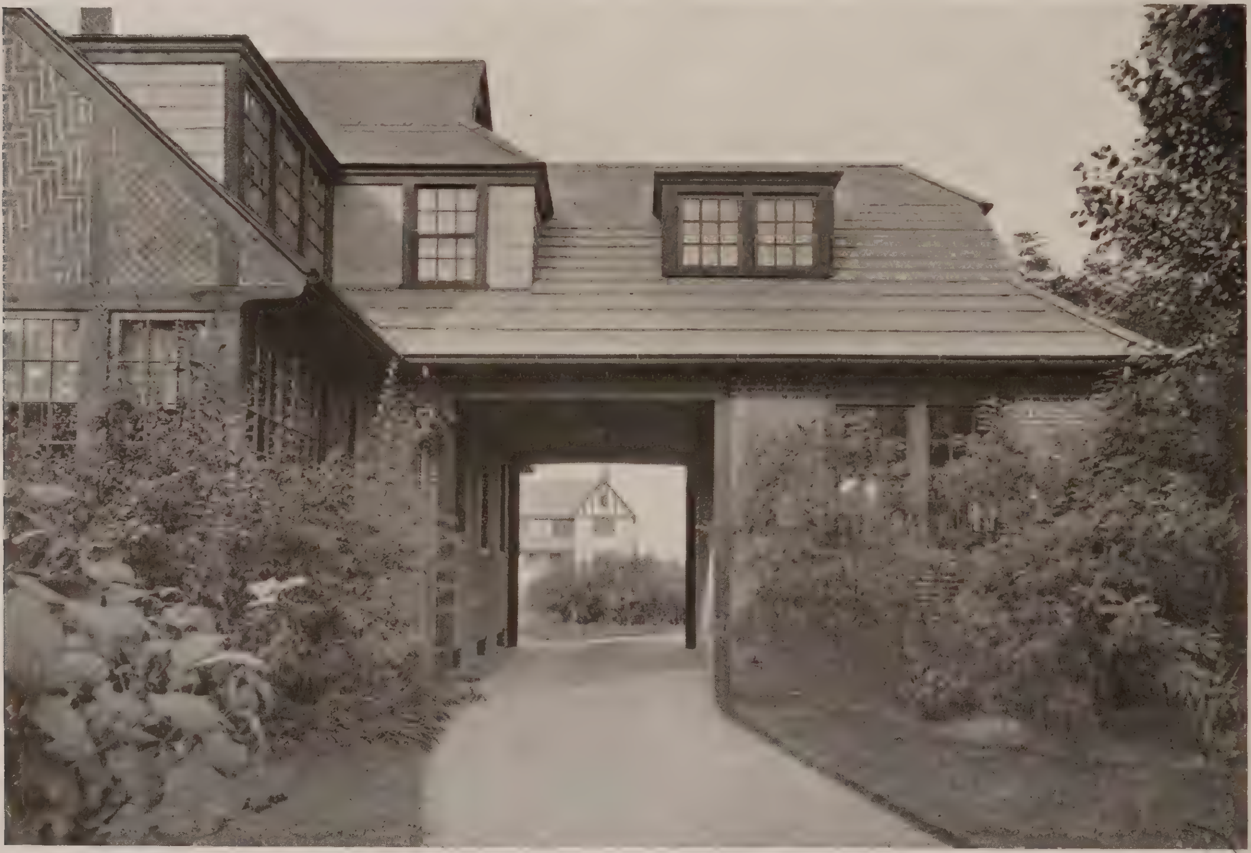
FIRST FLOOR PLAN



SECOND FLOOR PLAN



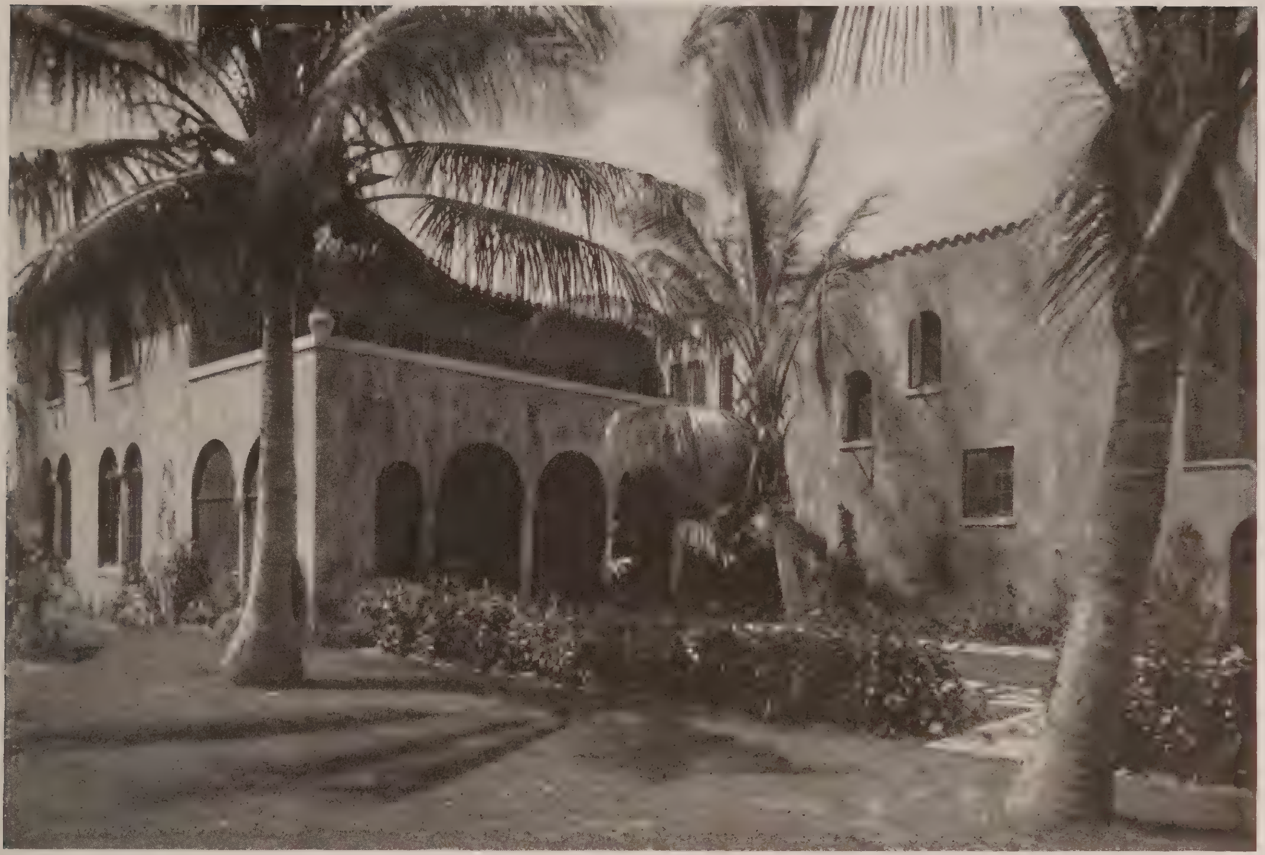
GENERAL VIEW FROM STREET



GARAGE AND SERVICE ENTRANCE

HOUSE OF F. L. RICHARDSON, ESQ., NEWTON, MASS.

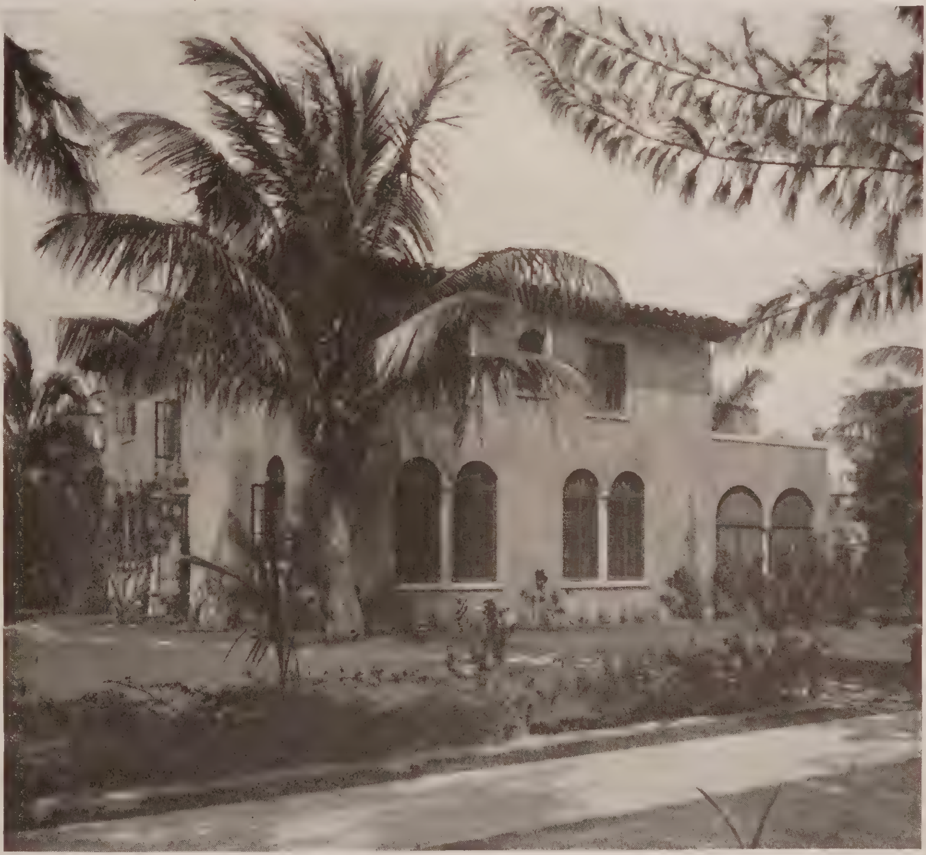
FRANK CHOUTEAU BROWN, ARCHITECT



VIEW LOOKING TOWARD GARDEN ANGLE

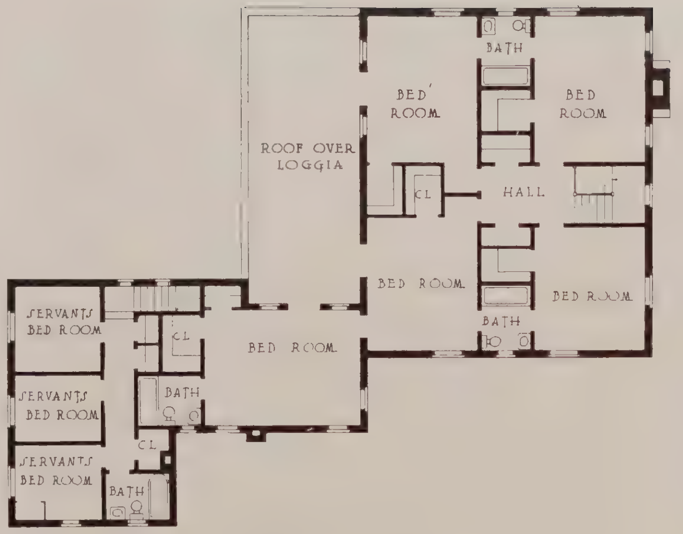
PEACH colored stucco covers the walls of this house, and upon its roofs are handmade tile produced in Florida and said to be the only clay roofing tile made in this country by hand. The floors are laid with a flooring tile which is also made locally. Since no heating apparatus is considered necessary only fireplaces are used.

The highly Spanish character of the building is emphasized by its tropical setting which includes palms, orange trees and various tropical plants as well as vines and hedges. The building contract was let in February, 1920, and the house was ready for occupancy December 1 of the same year, the cost of the building complete being $35,000.

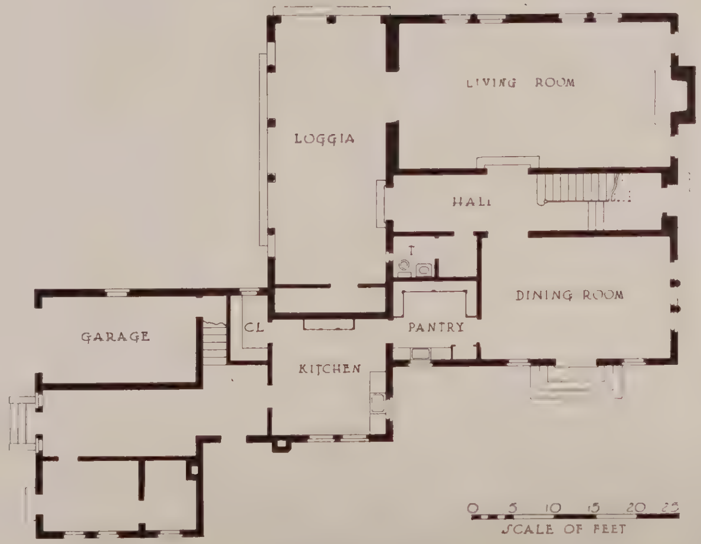


GENERAL VIEW FROM THE STREET

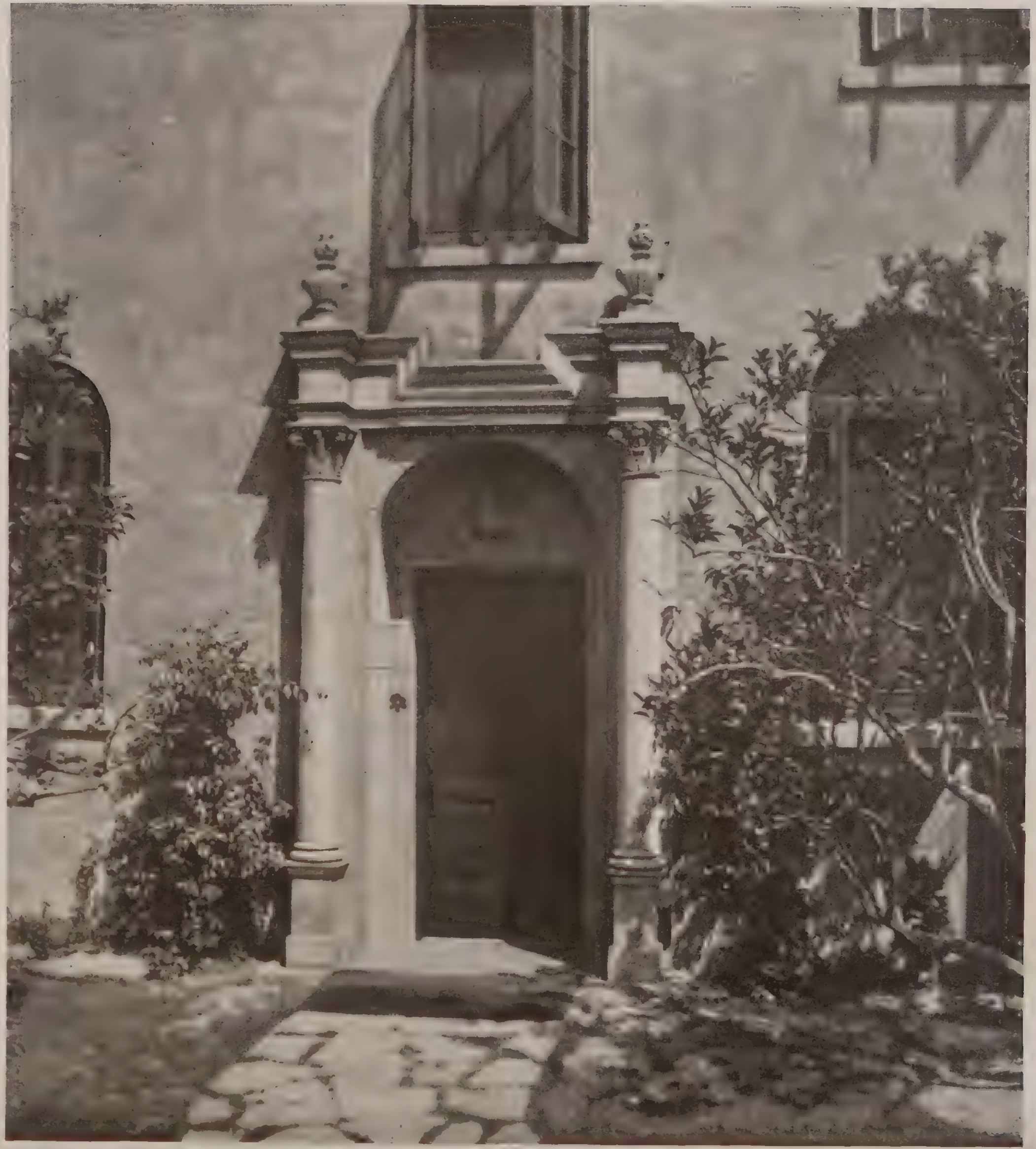
HOUSE OF O. FRANK WOODWARD, ESQ., PALM BEACH, FLA.
ADDISON MIZNER, ARCHITECT



SECOND FLOOR PLAN

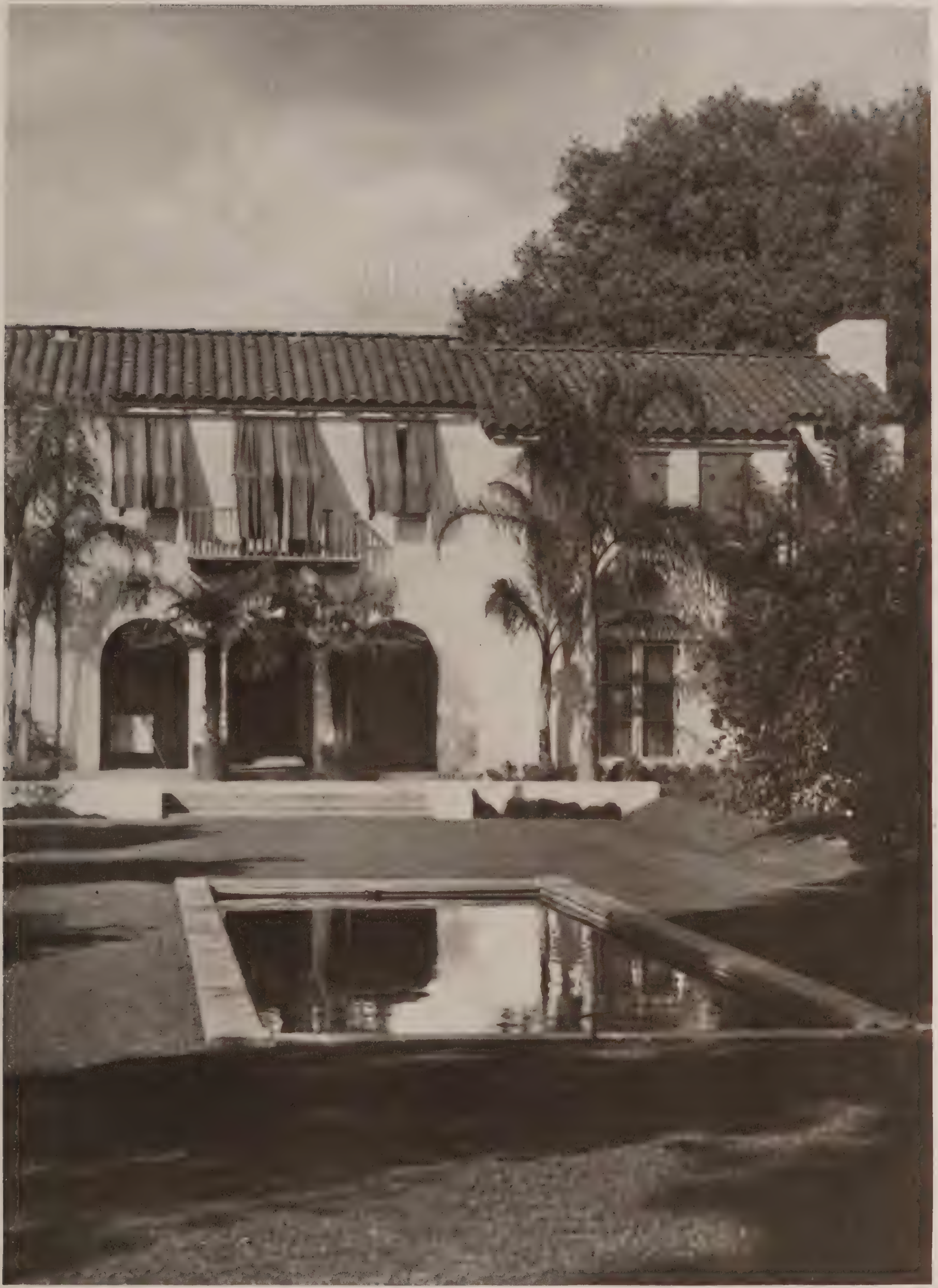


FIRST FLOOR PLAN



DETAIL OF ENTRANCE

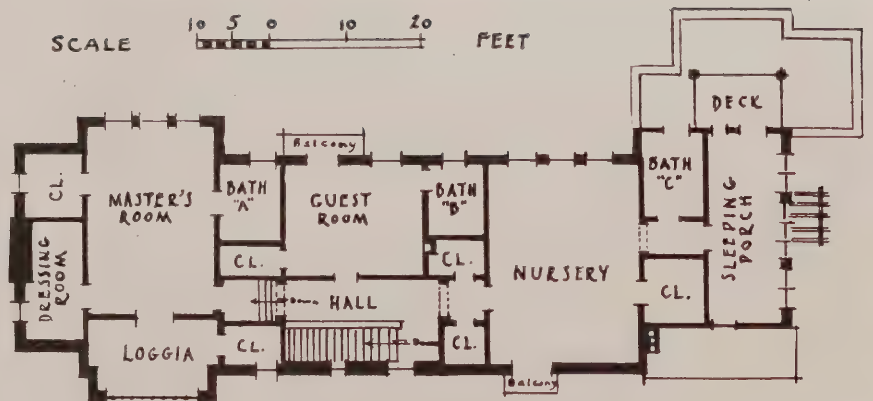
HOUSE OF O. FRANK WOODWARD, ESQ., PALM BEACH, FLA.
ADDISON MIZNER, ARCHITECT



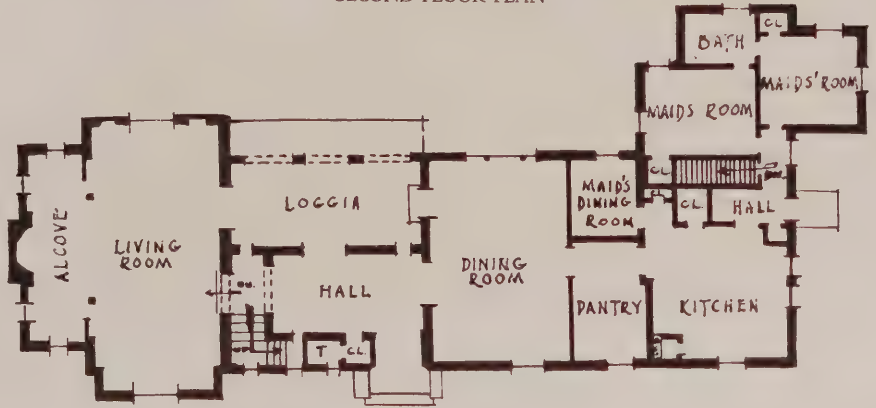
DETAIL OF GARDEN SIDE

HOUSE OF EARL V. ARMSTRONG, ESQ., PASADENA, CALIF.

JOHNSON, KAUFMANN & COATE, ARCHITECTS

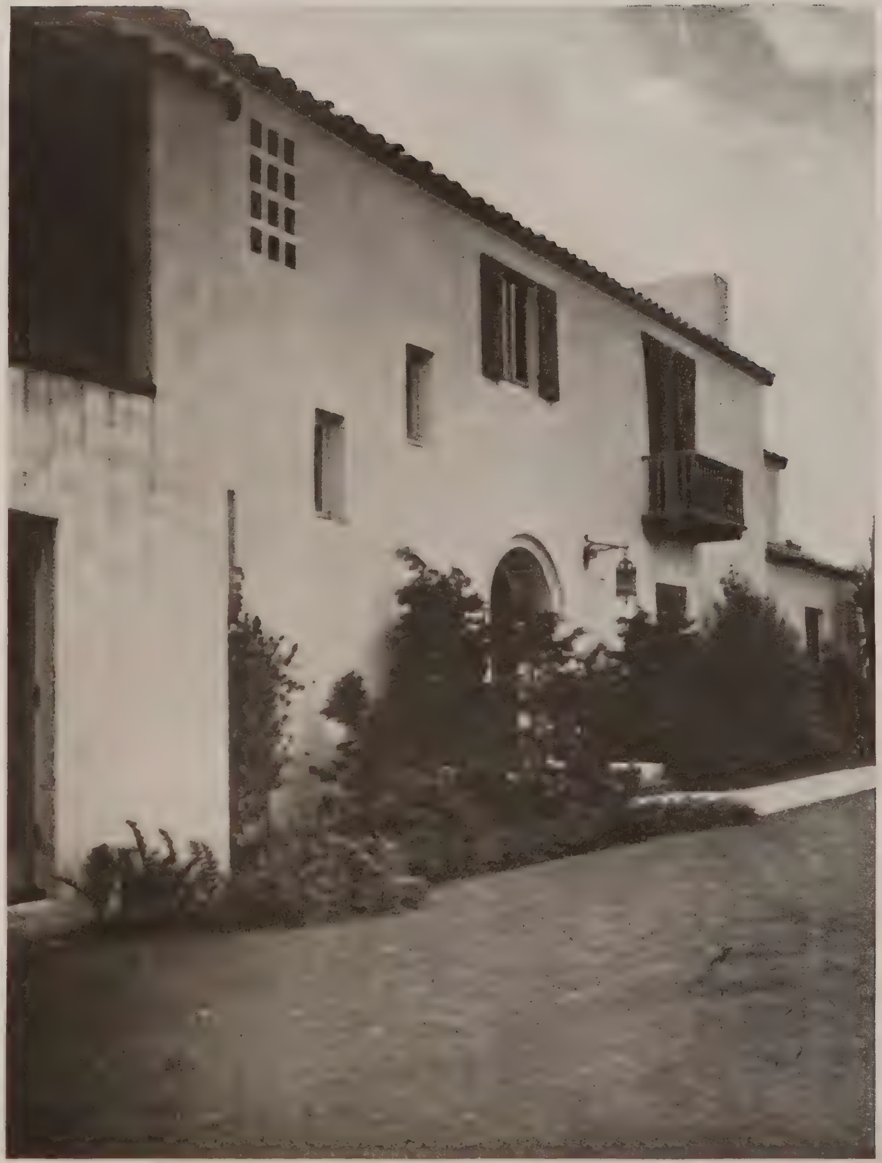


SECOND FLOOR PLAN



FIRST FLOOR PLAN

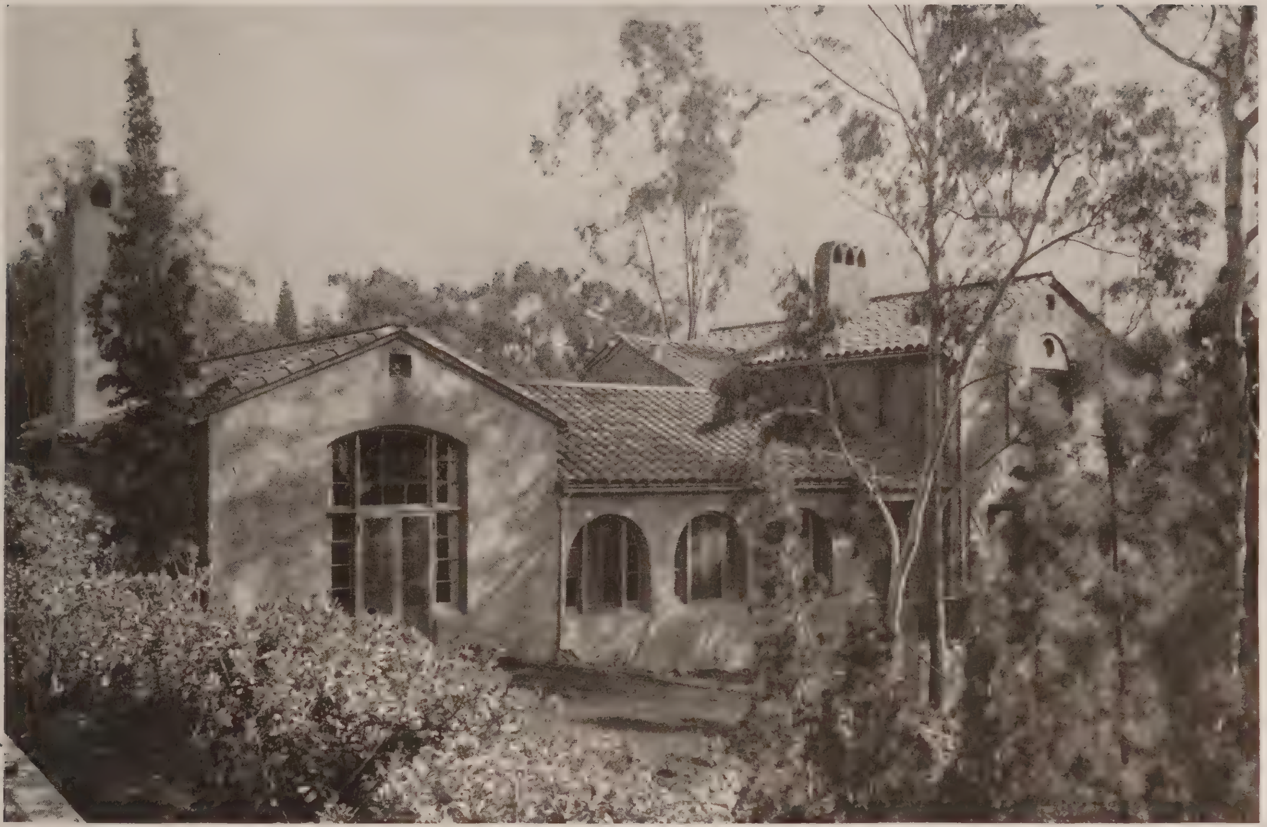
THE house and the wall which surrounds its courtyard in true Spanish style are of stucco of a moderately rough surface, while its roofs are covered with the roofing tile such as are still in place upon the early Californian missions. The architects of the house have been unusually successful in maintaining without overdoing the reticence and simplicity which characterize the best of the early Spanish work, and added character has been given the building by the judicious use of wrought iron in simple forms for balustrades about balcony and loggia and for a panel of ironwork set within the gate which leads to the courtyard.



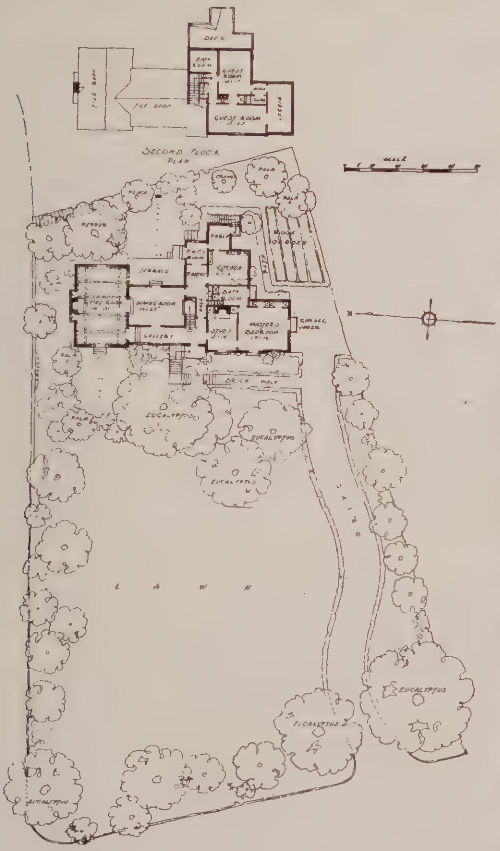
DETAIL OF ENTRANCE SIDE

HOUSE OF EARL V. ARMSTRONG, ESQ., PASADENA

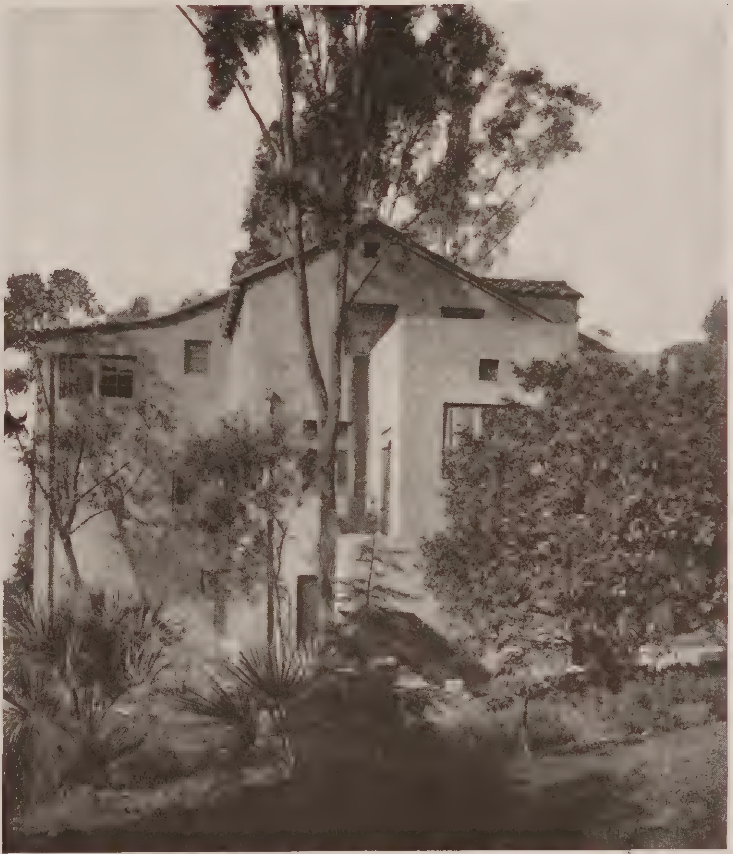
JOHNSON, KAUFMANN & COATE, ARCHITECTS



VIEW OF WEST ELEVATION



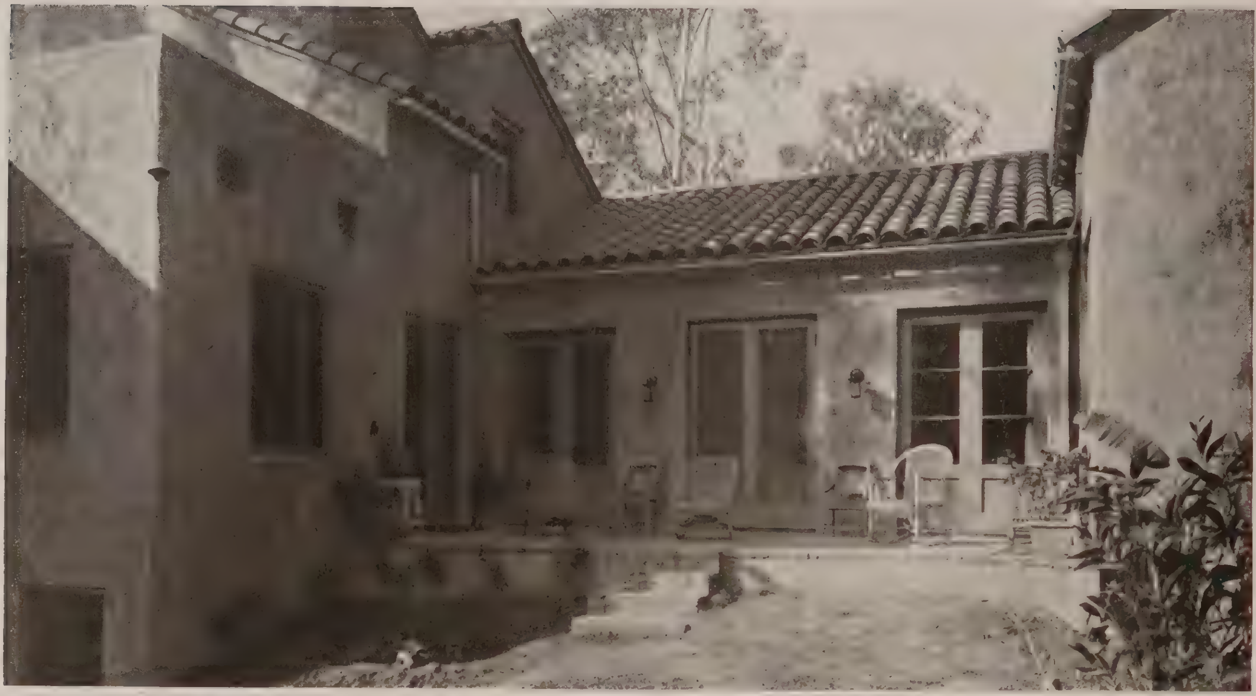
FLOOR AND PLOT PLANS



VIEW OF EAST ELEVATION

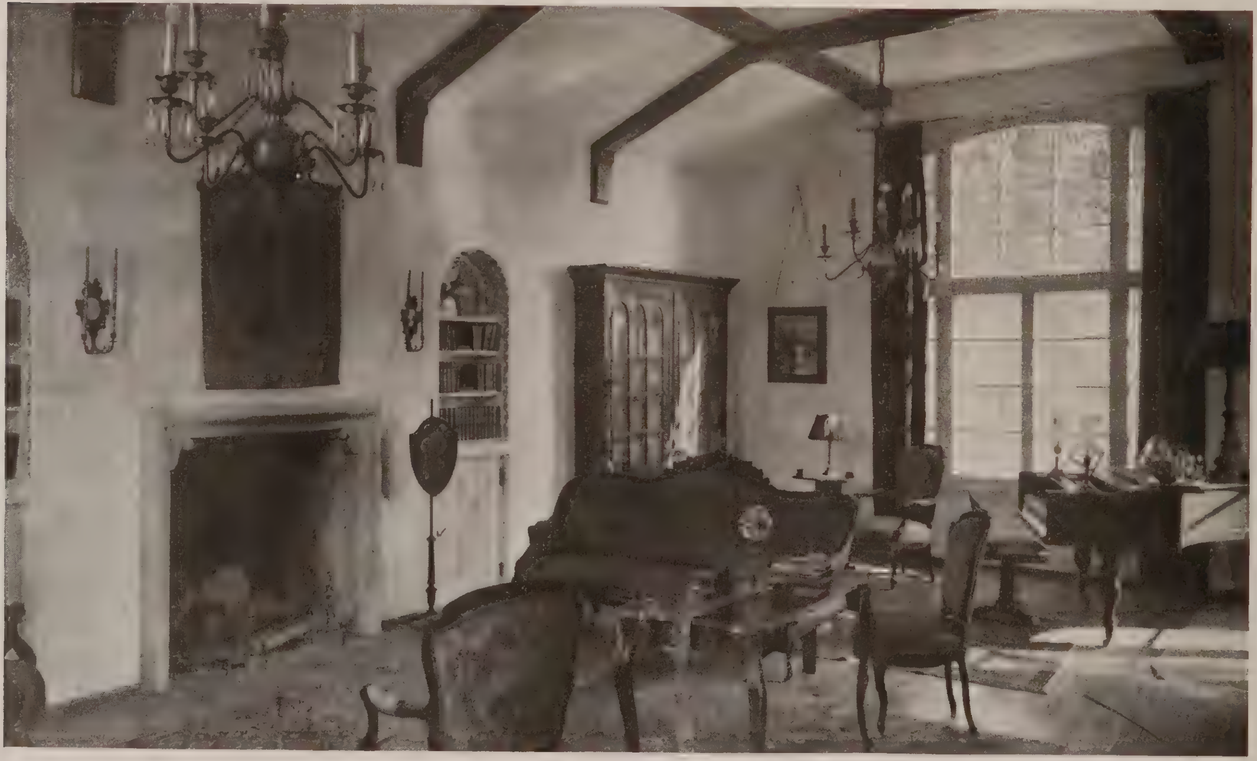
HOUSE OF EDWARD R. RICHARDSON, ESQ., LOS ANGELES

CARLETON MONROE WINSLOW, ARCHITECT

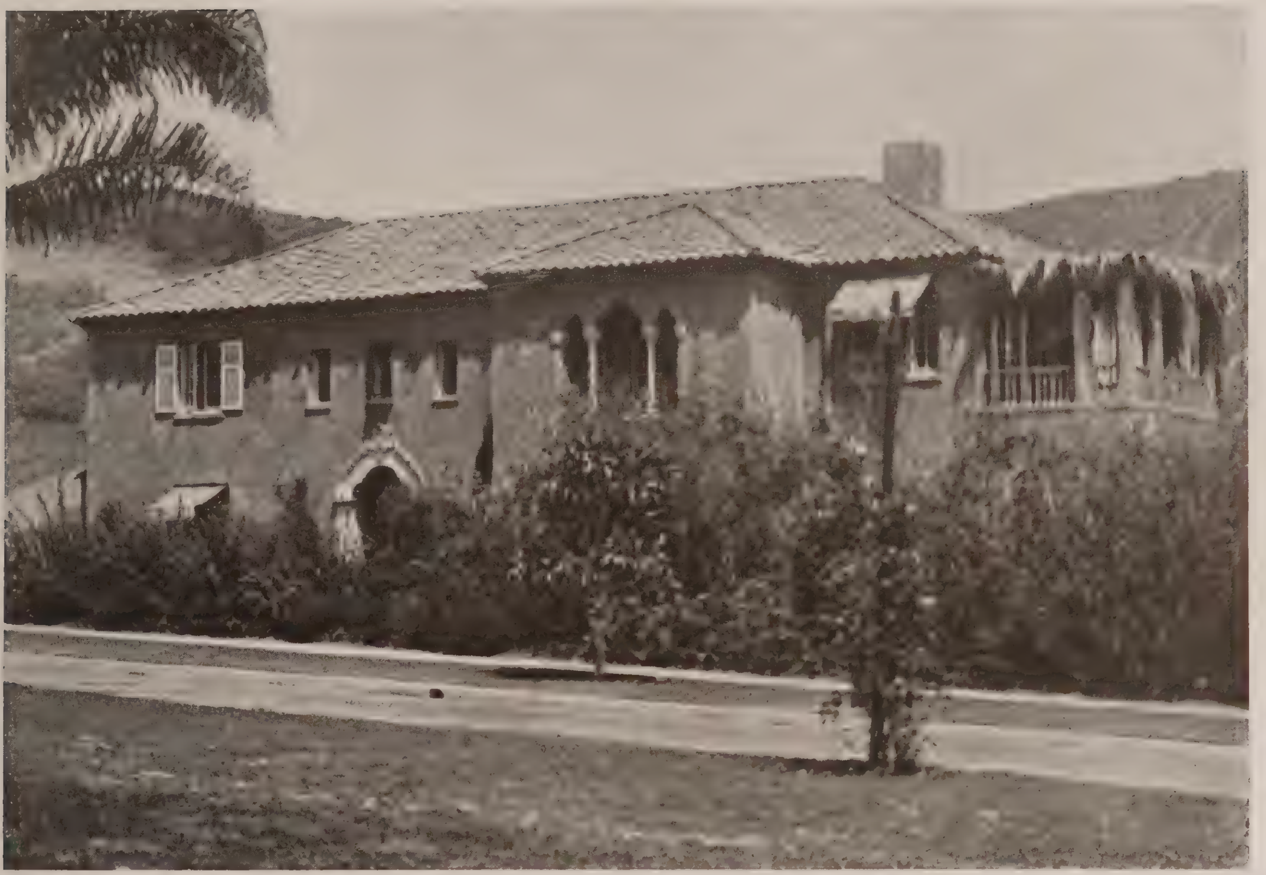


DINING ROOM COURT AND TERRACE

THIS house has been designed to fit an especially attractive site possessed of fine old trees. The road swinging past the property gently rises to a higher level so that only the upper story and roofs of the house show as one approaches it. The walls are of heavy frame finished with stucco, colored a burnt orange gray, contrasting with a clear Veredian green on the window sash and shutters. The vent openings into the attic spaces are filled with old terra cotta Chinese grilles with a shiny jade colored glaze. All stucco and interior plastered surfaces are wavy and all corners are rounded. Roofing tile is of kiln run terra cotta. The house cost $28,000 and has been recently completed.

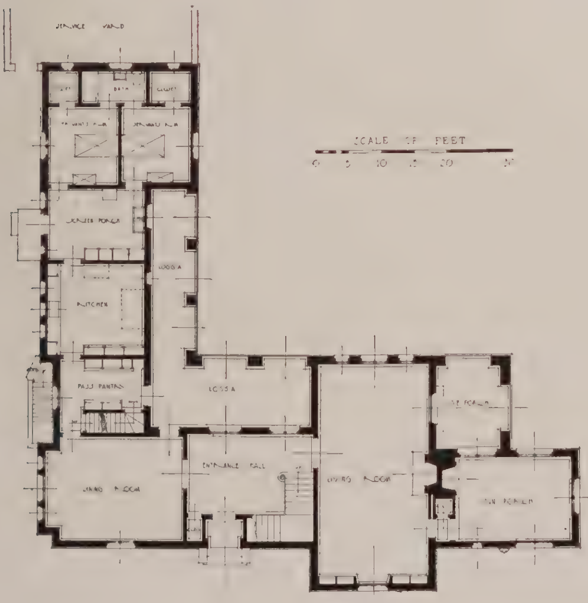


INTERIOR OF LIVING ROOM
HOUSE OF EDWARD R. RICHARDSON, ESQ., LOS ANGELES
CARLETON MONROE WINSLOW, ARCHITECT

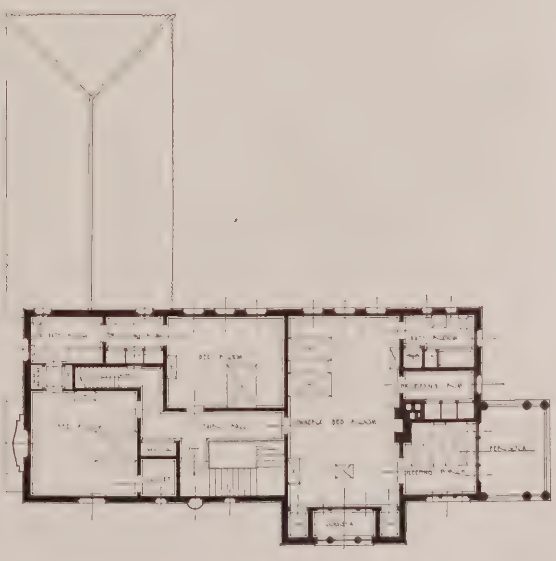


HOUSE FOR STAFFORD W. BIXBY, ESQ., LOS ANGELES
ELMER GREY, ARCHITECT

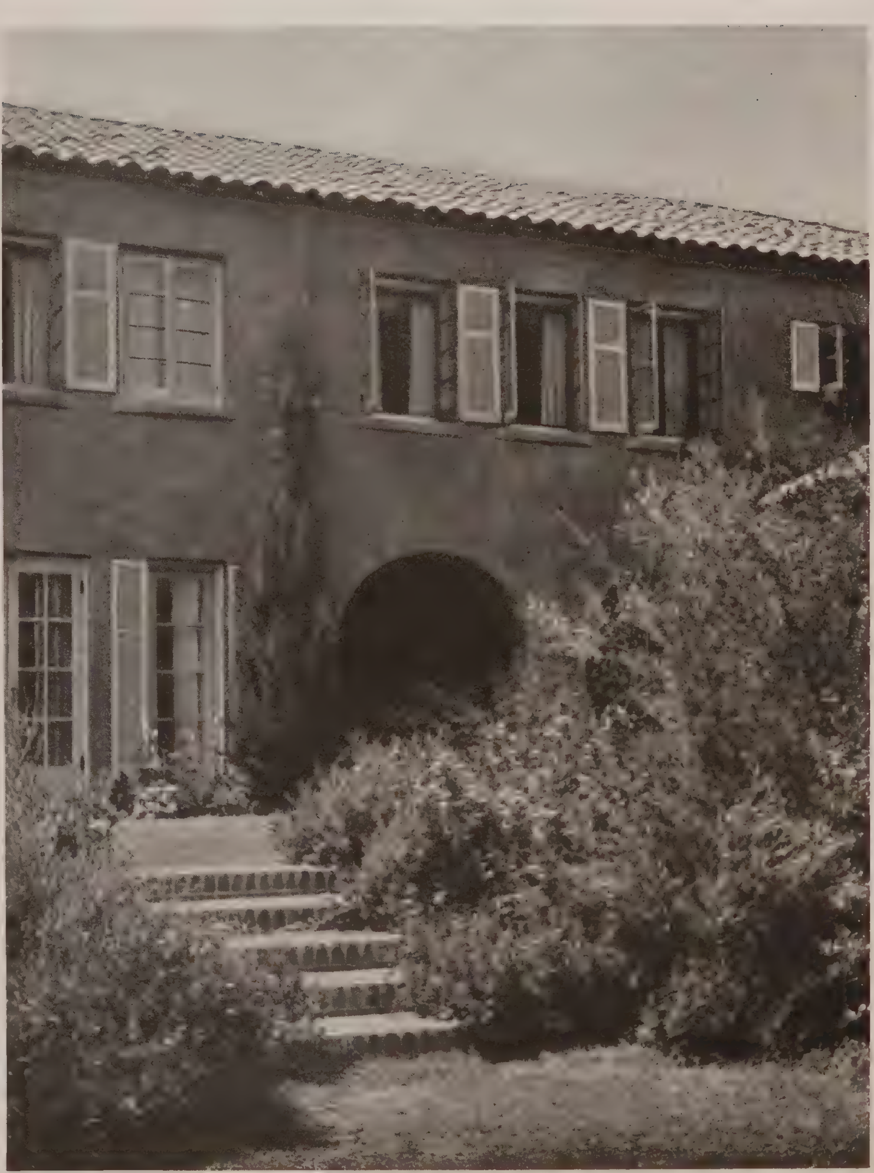
EXTERIOR walls of hollow tile covered with stucco of moderate roughness and of a warm, brownish pink color enclose this California house of Spanish type. Ornament is of cast cement, and the roofs are covered with roofing tiles made today in the character of old hand-made Spanish tiles and laid irregularly. Interior trim is of birch, and the flooring is of oak. Successful use has been made within as well as without of wrought iron of simple pattern. For heating use has been made of a hot air system of the unit type. The building contract was let during November, 1919, and the cost per cubic foot was about 37 cents. The planting is an attractive element of the completed result.



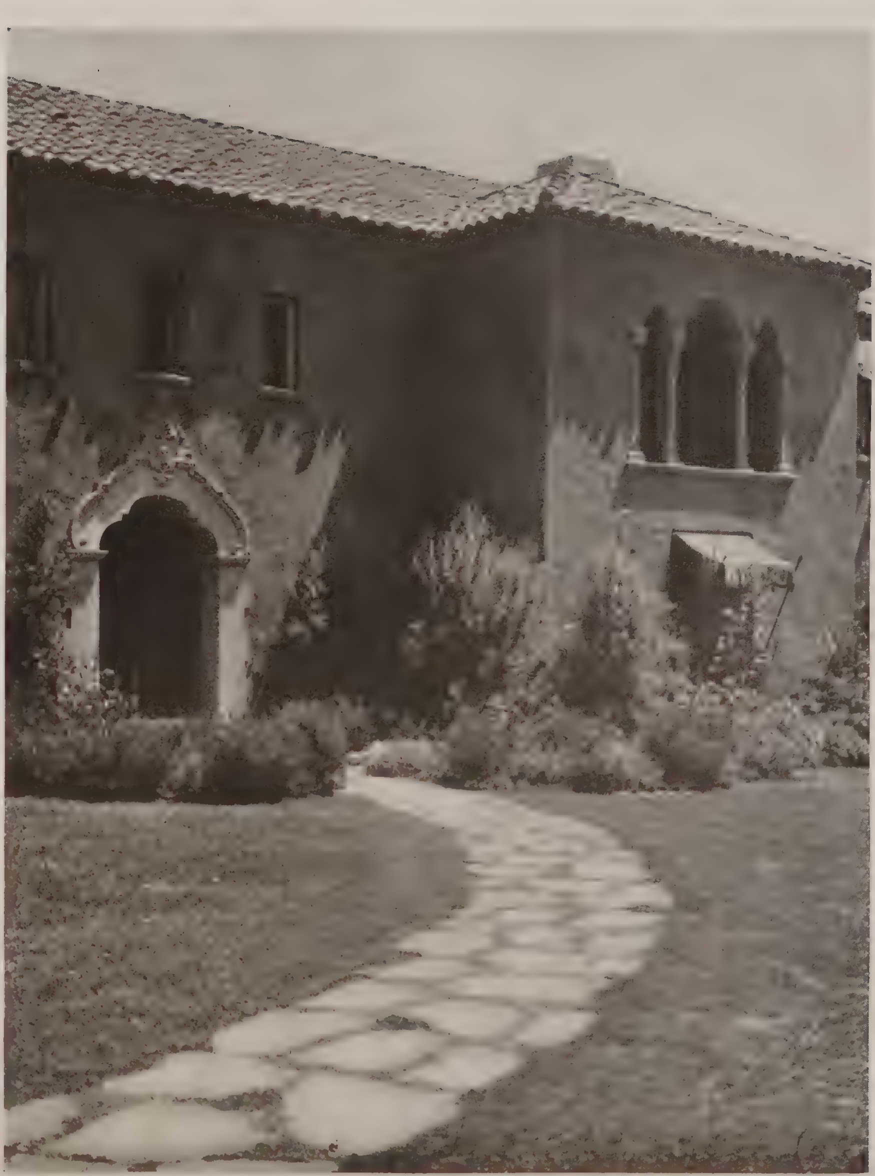
FIRST FLOOR PLAN



SECOND FLOOR PLAN



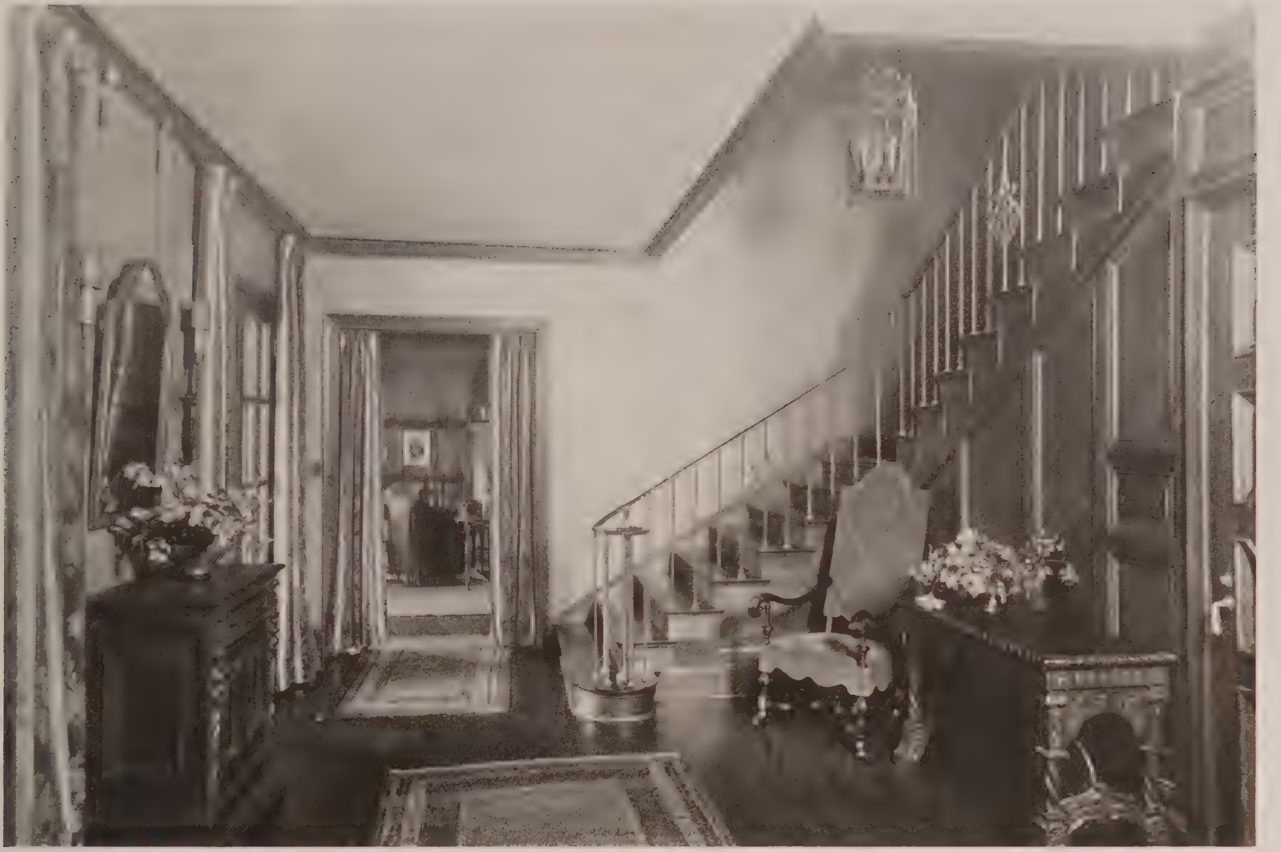
DETAIL OF GARDEN FRONT



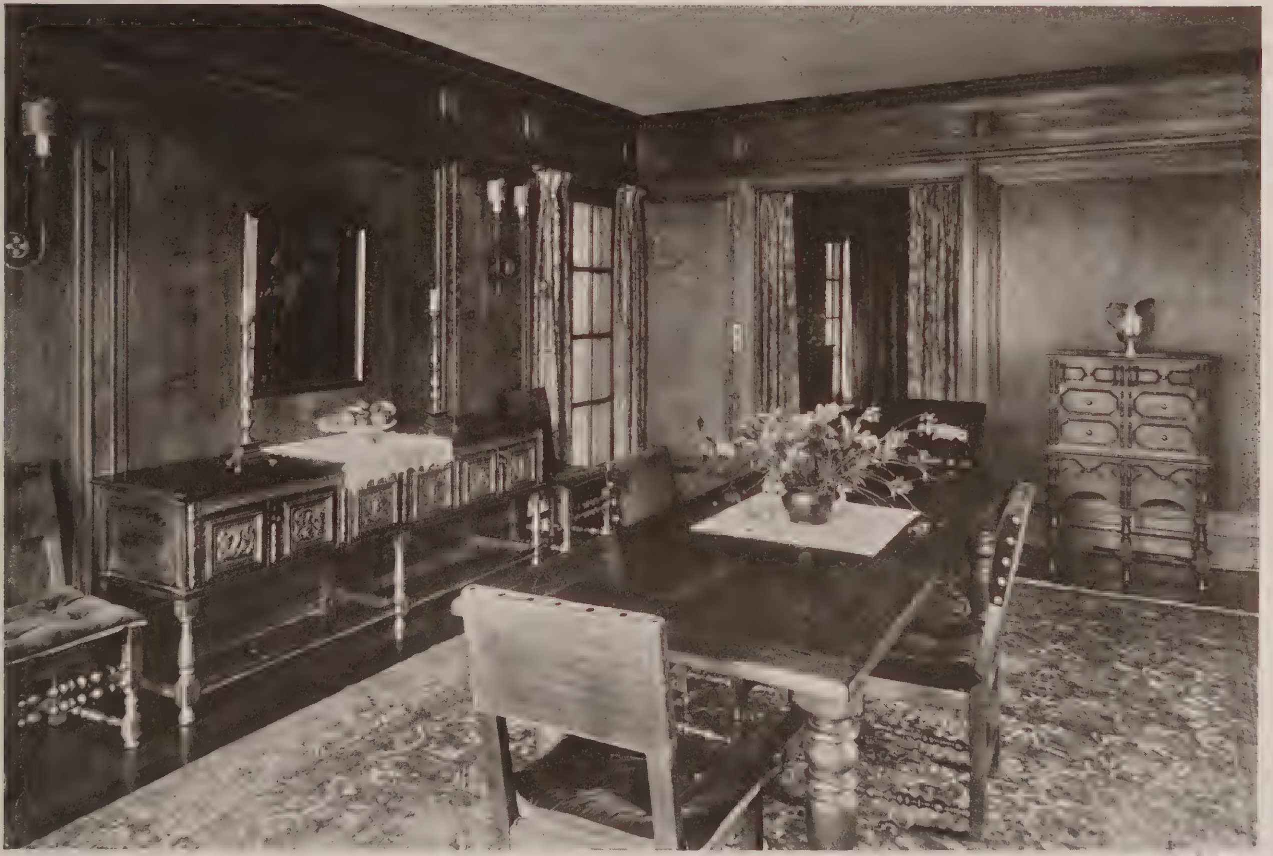
DETAIL OF ENTRANCE FRONT

HOUSE FOR STAFFORD W. BIXBY, ESQ., LOS ANGELES

ELMER GREY, ARCHITECT



HALL AND STAIRCASE



Photos by Frederick W. Martin

DINING ROOM

HOUSE FOR STAFFORD W. BIXBY, ESQ., LOS ANGELES

ELMER GREY, ARCHITECT

EDITORIAL COMMENT

A LESSON FROM WREN

IT is a matter of gratification to the architectural profession to note in the daily press the widespread recognition accorded the bi-centenary anniversary of the death of Sir Christopher Wren. We are apt to complain that architecture receives too scant public recognition, yet this general notice of Wren, while possibly stimulated to some extent by the efforts of the British architectural societies, is proof again that real merit obtains its full measure of recognition. It is not always immediate, but as indicated by Carlyle's appreciation of Wren's buildings, architecture has an uplifting influence on the community which will in time induce expression of enthusiasm and support for its creators. Carlyle is said to have remarked about Chelsea Hospital: "I had passed it almost daily for many years without thinking much about it, and one day I began to reflect that it had always been a pleasure to me to see it, and I looked at it more attentively, and saw that it was quiet and dignified and the work of a gentleman." All good architectural works are thus continually contributing to the enrichment of civilization, and this, coupled with the pleasure the artist derives from the mere doing, should be stimulating enough to lead architects to strive constantly to design buildings which will serve practical uses and give pleasure to those who view them.

The work that Wren accomplished and the broad vision he brought to his tasks have in them a definite message of value for architects today. His conception of architecture embraced more than buildings; he saw the essential connection between architecture and the plan of a city; the city was simply a larger study in plan, requiring the exercise of similar imaginative powers in providing circulation, axial development, and the weighing of relative importance between mass and detail as obtained in the planning of buildings.

Following the great fire of London Wren produced a plan for the rebuilding of the city, and if narrow private interests and public conservatism had not prevented, it would have spared London many of the tremendous problems it now faces in the administration of the city. Wren's scheme called for two fine streets, 90 feet in width, to converge on St. Paul's Cathedral from the Tower and the Royal Exchange; about the latter were to be grouped the public offices and ten radiating streets, each 60 feet in width. It was a noble scheme and of great simplicity that would have made London as fine a capital city as any in the world.

The urge for better city planning that moved Wren to study the city of London in 1666 is slight compared with the need that exists today. The growth of the modern city, involving the concentration of large populations in limited areas, the tremendous amount of automobile traffic, tall office buildings with the attendant peak loads on rapid transit facilities, all combine to present a problem well-nigh staggering in complexity and scope. Analyzed, however, it can be reduced to simple terms; the units and the methods may be heroic in scale, yet in principle they are the same as hold in any problem of architectural planning. They can be solved by an intelligent application of architectural principles which requires the imaginative and constructive visualization of the architect. Science will not solve them in the simple way that will permit human beings to function naturally and without confusion, but the architect with his sensitive reactions to human emotions can grasp them and evolve a solution essentially simple and workable.

The need for city planning is felt in every important city of this country, and various steps are being taken to approach the problem. Unfortunately they emanate largely from political sources, ambitious public officials, or private individuals and corporations that stand to gain if legislation embracing their particular recommendations is enacted. Architects have been timid about taking a definite part in these movements, or else they have felt unfitted for the work. An architect well trained and qualified by experience in the planning of buildings has every essential qualification to entitle him to express an opinion on city planning; he should overcome his timidity, remembering that he has the ability to render a public service and that his professional obligations demand his contributing to the public welfare. All men are not favored with the forcefulness of character or the tremendous capacity for work that were Wren's endowment; the force that only the rare individual can exert is, however, possible through group effort. Every chapter of the Institute and every local society of architects should take upon itself the obligation of studying its own city problems; its voice should be heard in every public hearing at which problems relating to the physical growth and plan of the city are discussed. It should be the aim of every local group of architects to impress on their fellow citizens that the co-operation and approval of architects are something to be sought, and that if they are withheld there is justifiable criticism of the scheme proposed. In this larger sphere of public service architects have an avenue of approach to public recognition, and if they apply their creative talents to furthering the general welfare, suitable recognition will not be permanently wanting.

THE ARCHITECTURAL FORUM

APRIL 1923

HECKSCHER BUILDING
FIFTH AVENUE AND FIFTY-SEVENTH STREET -- NEW YORK
Architects
WARREN & WETMORE
Heating Contractors
BAKER-SMITH COMPANY, INC.

Keeping Up with the Neighborhood In Both Design and Materials

THE setting of a jewel adds to or detracts from its value. So with buildings. To be the equal of the company it keeps, such projects as the Heckscher Building must represent not only good architectural design but should have modern and durable materials throughout. That is why the piping is usually "NATIONAL" in buildings of this character.

Architects of wide experience know what pipe gives full measure of durability. Modern plumbing contractors know what pipe threads well, has tight joints and works up well on the job. The owner wants the assurance that the pipe service will measure up to the high standard set for the building—equal to the best of this type of service.

The very generous use of "NATIONAL" pipe in large buildings is evidence that "NATIONAL" qualifies as *the recognized standard of wrought pipe* for modern building service.

NATIONAL TUBE COMPANY
PITTSBURGH, PA.

WHERE ART AND DETAIL UNITE

A finished piece of Tile, if it could speak, would tell a wonderful story of processes, of close attention to detail, of unremitting care.

How its ingredients are gathered from the far places to insure basic quality; how those ingredients are mixed and ground to make smooth, even texture certain; how the Tiles are shaped, fired, inspected and graded, that the product may carry the elements of merit through to the finishing touch—these represent a multiplicity of operations that command consideration for Tiles as representing work well done.

The architect naturally experiences a sense of satisfaction in dealing with a material in which processes are so carefully regulated.

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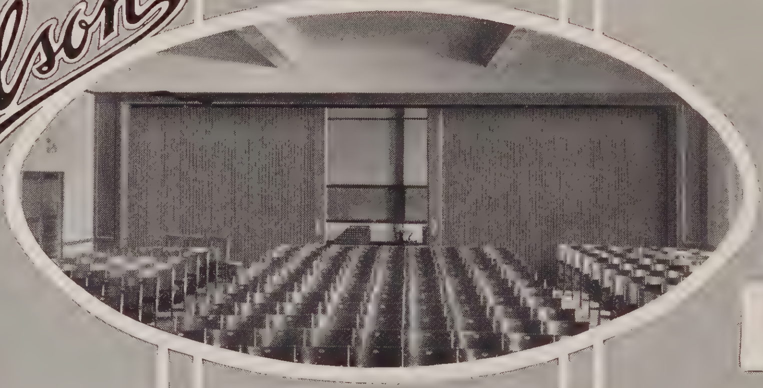

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SEVERAL exacting requirements had to be met in planning the floor for this dispensary reception room. First of all, cleanliness and sanitation. Then quietness, comfort and secure footing. Durability and economy of upkeep naturally had to be considered.

The architects decided that these qualities were best combined in a Linotile Floor. Linotile is a composition containing cork and wood flour and various gums. It is supplied in tile form and is laid piece by piece, sealed to the base and at the joints with waterproof cement. Linotile is impervious to moisture; it is not easily stained; and the finished floor has no cracks or crevices to catch the dirt.

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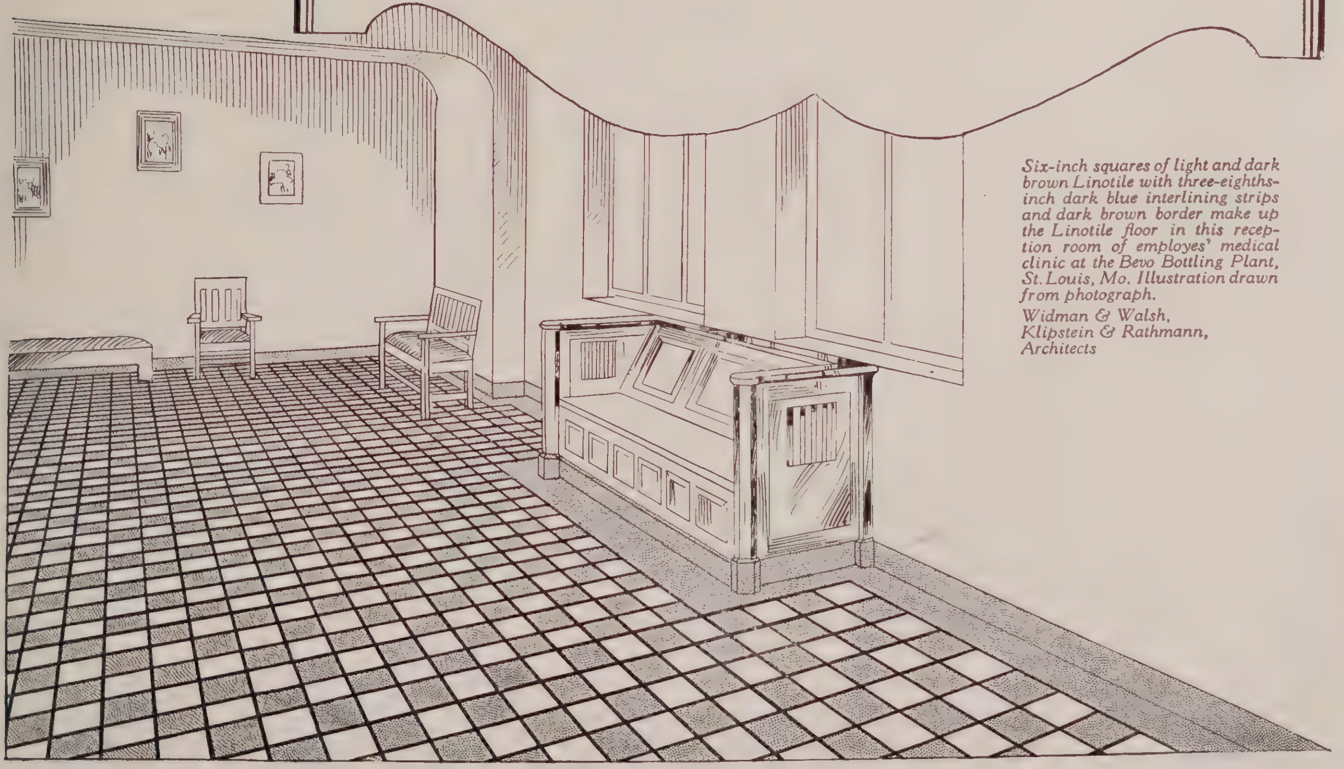

Six-inch squares of light and dark brown Linotile with three-eighths-inch dark blue interlining strips and dark brown border make up the Linotile floor in this reception room of employes' medical clinic at the Bevo Bottling Plant, St. Louis, Mo. Illustration drawn from photograph.

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Universal Safety Treads were installed on these iron stairs in 1904 at the time the Station was built. Although in a most unfavorable situation, constantly exposed to the salt air directly off Long Island Sound and also subjected to constant wear, no replacement occurred until 1917, AFTER 13 YEARS OF CONTINUOUS WEAR AND EXPOSURE TO THE ELEMENTS.

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BOOK DEPARTMENT

WALLPAPER; Its History, Design and Use. By Phyllis Ackerman, Ph.D. 268 pp., 5½ x 8¼ ins. Illustrated, and bound in cloth. Price $3.50. Frederick A. Stokes Company, New York.

LIKE many of the other objects used by the architect or interior decorator wall paper may be said to be the offspring of necessity and ingenuity. Ever since the furnishing and decoration of homes were first begun it has been found necessary to screen in some way the bareness of interior walls. The ancients made lavish use of painting in various forms, and during the Gothic ages the necessity of relieving this bareness and bleakness of walls or of tempering their coldness was one of the motives which led to the weaving in Flanders and northern France those marvels of tapestry which today constitute the delight as well as the despair of collectors. This same necessity led in England to the use of wood paneling which in one form or another endured from the Gothic period until well into the Georgian era. All of these methods of covering walls, however, were necessarily costly, and their use was therefore to be enjoyed by only a few, and it was the hope of securing a wall covering within the reach of the many which led to the beginning of the making of wall paper which has gone through many stages of evolution before reaching the point where it is within the ready reach of anyone who chooses to buy.

A Modern Reprinting of an Early Nineteenth Century French Wall Paper

Illustration from "Wallpaper; Its History, Design and Use"

In the preface to this full and valuable treatise on wall paper the author points out that an art which has become an industry often ceases to be regarded as an art, and usually with some justice, for competition, with the resulting struggle for cheap production and the violent fluctuations in fashion induced artificially for the sake of profit are not conducive to the maintenance of high standards. Because this is true the production of wall paper reached a state lower than that to which almost any of the other industrial arts descended, and even its partial redemption has been effected only after a long struggle.

It has long been the fashion in some quarters to deprecate the use of wall paper as something which is intrinsically unworthy. But why? It is made by machinery today, to be sure, instead of painted by hand as in its early stages or block-printed by hand as at a later day, but being made by machinery has brought it within the reach of everyone's purse; it has brought what was once the prized possession of the few within reach of the many, and it remains for good taste to guide and turn to good account the possibilities which quantity production has created.

Wall paper is important and not to be ignored from a decorative standpoint, because, for one reason, its use is practically universal. It long ago ceased to be necessary to use poorly designed or even indifferent wall paper, for the manufacturers have succeeded in placing upon the market paper much of which is extremely good. This is

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From XI to XVI centuries in Normandy, Brittany and other parts of France

With a Preface by Ralph Adams Cram, F.A.I.A.

THE glories of old French architecture include far more than the Gothic cathedrals and the renaissance chateaux, for some of the most beautiful buildings in the world are the village churches and wayside chapels of France and the smaller domestic buildings of different kinds which abound in the rural districts and small towns.

For the architect whose work includes country or suburban residence work no more helpful book could be imagined, for these old French buildings with their incomparable grouping, besides affording practical precedent for modern use, were developed in materials easily had today in almost any part of the United States.

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within anyone's reach, and in addition to being stimulating in itself it is the means of creating interest and often actual beauty in countless places where otherwise both would be wanting. Wall paper indeed has prevented our being more afraid even than we are of color and design in decoration, and its use has redeemed thousands of homes from the chill of bare walls and hard plaster.

In this excellent work Dr. Ackerman covers well the entire subject of wall paper; after reviewing its history in the different countries where it has been made and used, the matter of wall paper's present-day use is gone into with many helpful suggestions which should aid in making its use in modern homes more successful.

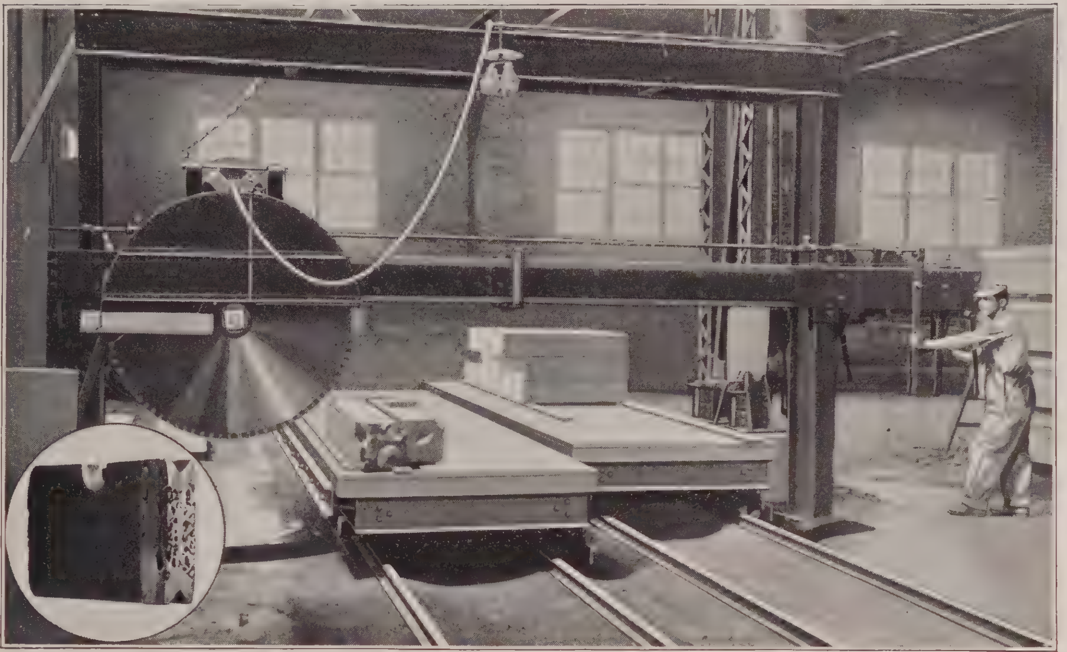
LITTLE CHURCHES. Published under the auspices of the Church Art Commission of the Diocese of Colorado. Price 50 cents. Kendrick-Bellamy Stationery Co., 16th and Stout streets, Denver.

FEW departments of architecture have received less attention than that of the small church. During the past few years, owing to its vital importance, the small house problem has demanded and received the attention of architects to such an extent that the designing and planning of the small house have been thoroughly studied. The small church problem remains unsettled if not unnoticed, and perhaps this very fact has recently led to a study of its possibilities at the hands of a group of architects, many of the plans which are the result of their efforts being published in this little brochure.

Not only are the churches small but they are evidently intended for use in places where sufficient ground for appropriate settings may be had. The plans are therefore for buildings low and spreading, made more so by the inclusion in each instance of guild rooms and rooms for other parish uses, and to each church there is added a small house for the pastor. All this is arranged with considerable skill as to plan, and in several instances excellent plans are clothed with equally good exteriors; one of the designs is for a small church and accessory buildings of stucco which possess much of the charm of the early Franciscan missions. Added to the plans and exterior drawings of village churches are several pages on such allied subjects as lighting fixtures and glass.

ESSAYS AND MEMORIALS. By John W. Simpson, President R.I.B.A. 1920-1. Membre Corr. de l'Institut de France, with Preface by Major H. Barns, F.R.I.B.A. 174 pp., 5½ x 9 ins. Price $4. The Architectural Press, London.

ONE of the most distinguished American architects has been known to regret that reading plays a part so comparatively unimportant in the life of architects of the present day. The problems of the practice of architecture are many and varied; construction competes with design in importance, while what might be called the "business" of architecture clamors today as never before for study and attention. In the process reading anything more than the current publications, concerned as they largely are with the phases of architectural practice just enumerated, is overlooked if not forgotten. And yet reading of other kinds is of vital import. More than most professions architecture is a matter of "background," which means acquiring the culture and taste which come from familiarity with its past—with its historical and critical aspects no less than with its practical phases. Not that such writing is not being done today, for during the past few years one in the front rank of American architects has made contributions to the study of mediæval architecture, life and thought which will last forever; more recently another scholar has written



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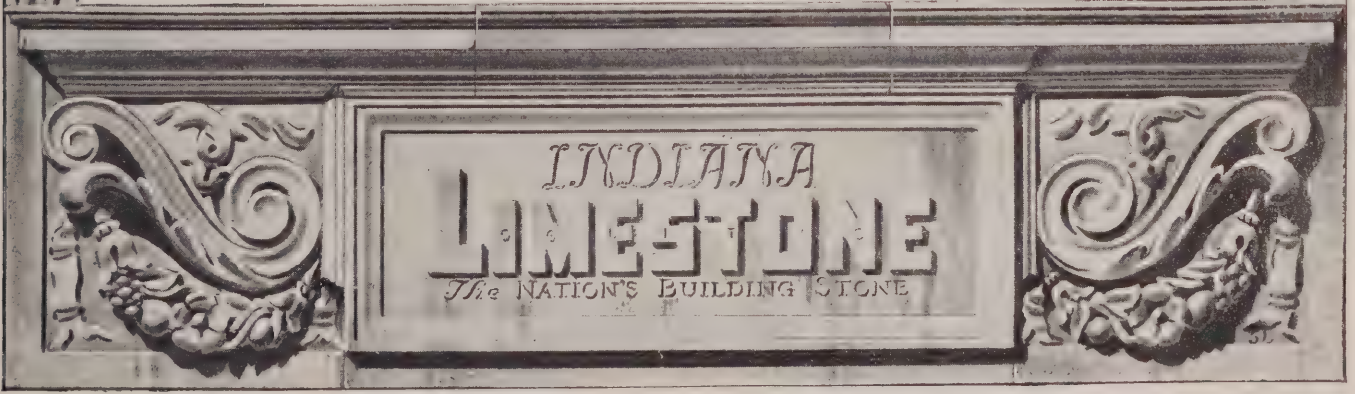

The Significance *of* the Fine Arts

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CLASSICAL ARCHITECTURE. *By C. Howard Walker.*
ARCHITECTURE OF THE MIDDLE AGES. *By Ralph Adams Cram.*
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CITY PLANNING. *By Edward H. Bennett.*
THE INDUSTRIAL ARTS. *By Huger Elliott.*
MUSIC. *By Thomas Whitney Surette.*

THE Committee on Education of the A. I. A. has produced this volume for use as a textbook in American colleges, and for general reading and study by the public, with the purpose of arousing interest in the fine arts and creating a better understanding and appreciation of them. The book is intended specifically to appeal to those who have heretofore taken but little interest in the arts, and have had no realization of the fact that the fine arts are for them and that these arts are already inseparably connected with their everyday lives.

Each of the chapters has been prepared by a recognized authority on the subject. Written for the laity, the work is free from technical matter and is notable for the clarity of its language and absence of complicated theoretical discussion. It presents in simple form the vital principles of design and construction which not only govern good architecture, but should also influence the character of all other arts and every manufactured product and material thing that human hands can make.

483 pp., 5¾ x 8½ ins. Fully illustrated, bound in cloth

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ROGERS AND MANSON COMPANY
142 Berkeley Street, Boston

well of Romanesque sculpture and all that it involves.

In the present work a well known English architect presents a volume of essays which are among the most interesting we have read. Architecture is inextricably mixed with history, and if history be as someone has said the "written conscience of the human race," architecture may as truly be called history's visible, tangible expression. Mr. Simpson studies several periods of architectural history, but what we have particularly noticed is the essay entitled "In the House of the Interpreter," an analysis of the era of Louis XIV and Colbert in which there is presented in a new and vivid manner the history of that brilliant and calamitous period. Another essay which possesses particular interest is that entitled "Architectural Principles in Engineering," an essay which records, to be sure, many things which most architects already know, but which presents them in a cogent and logical way which gives them a new interest. To quote: "I may point out that it is æsthetically necessary not only that construction should be sound, but that it should appear to be so. A structure that looks unstable will not please the observant eye, however ingeniously its engineer may have resolved its stresses and moments. The basis of ocular satisfaction is, moreover, by no means constant; the criterion we apply mentally to the delicate shafting and flying buttresses of Beauvais is quite other than that by which we judge the temples of Pæstum. Nor is this wholly a matter of place or of style; time also changes it. Those who rode, 40 or 50 years ago, upon tall bicycles with wheels some 5 feet in diameter, will remember the unceasing efforts of makers to comply with the demand for extreme lightness of appearance. The narrower the rim of the wheel, the more delicate the spokes, the greater was the "elegance" of the machine, according to the standards of the time. The advent of the "safety" bicycle with its pneumatic tires revolutionized not only the mechanics of the structure, but the scale of the sizes which satisfied the eye. Then the heavy wheel was deemed clumsy and disproportioned; now it is accepted as normal, and our taste rejects the "spider" type as flimsy. In like manner we anticipate that as buildings of reinforced concrete become familiar we shall accept with satisfaction far more attenuated proportions, in points of support, than those which the eye now instinctively requires."

PICTURESQUE GREECE; ARCHITECTURE, LANDSCAPE, LIVES OF THE PEOPLE. By Hanns Holdt Hugo Von Hofmannstahl. 176 pp., 9¼ x 12 ins. Illustrated. Price $5. Architectural Book Publishing Co., New York.

THE camera of a traveler and writer has secured for this volume a large number of views many of which possess a decided value for the architect or the student. The Greeks as well as the Italians have a happy faculty of grouping structures of various kinds in effective harmony, and until one has seen a mediæval Greek or Italian hill town, so far off the road of progress that it has not yet been ruined by improvement, it is difficult to realize the beauty which may result when buildings interesting in themselves are so disposed that each adds its value to the beauty of the whole. Views in this work are largely of buildings — churches, monasteries or dwelling places — which are more or less archaic and have the strongly Byzantine character which is inherent in much Greek work. Many of the views, however, are of buildings or ruins which remain from the classical period.

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STANDARD WIRING FOR ELECTRIC LIGHT AND POWER; As Adopted by the Fire Underwriters of the United States. Prepared and sold by H. C. Cushing, Jr., Fellow A.I.E.E., 8 West 40th street, New York. 400 pp. Pocket size, bound in leatherette. Price $2.

THE use of electricity in many forms has now reached the point where the necessary wiring for its use is one of the most vitally important details in structures of many kinds. A few years ago the use of electricity was limited to its being employed for lighting and sometimes for bells of different kinds, but now its use for countless utilities and sometimes for supplying energy for heating the house or for cooking adds materially to the complexity of the wiring necessary for the proper handling of electrical current. With buildings of many kinds other than residences the use of electricity is even more extensive;—in addition to supplying light and furnishing power for the running of certain light utilities electrical current must now be supplied for operating elevators and often for the running of more or less heavy machinery. New uses for which current must be had are being discovered daily, and the equipment of buildings for the proper use of electrical current long ago became the function of electrical engineers whose proper training is now a well recognized and clearly defined department of engineering instruction. To make this wide use of electricity safe for the public there have been established laws and other requirements upon the subject,—laws by state and municipal bodies, and rules to a great extent formulated and enforced by fire underwriters, and both laws and rules are changed continually as growth has led to more highly specialized practice.

Annually since 1894 an edition of "Standard Wiring" has been issued, each year's publication bringing the presentation of the subject abreast of the times and by its increasing size serving to indicate the growing complexity of the matter. This latest edition is an authoritative presentation of the subject, and its use is recommended in offices of architects and engineers where anything more than the simplest wiring is designed.

CONCRETE CONSTRUCTION FOR ARCHITECTS; A Concise Treatise on the Design of Reinforced Concrete Slabs, Beams, Girders, Columns, and Footings, and a Description of the Actual Design of a Concrete Building, involving the Use of Flat-slab Construction. By DeWitt C. Pond, Author of "Engineering for Architects." 203 pp., 6 x 8¾ ins. Price $4. Charles Scribner's Sons, New York.

THE vast extent to which concrete construction is now being employed and the new uses to which this adaptable material is continually being put are causing changes in the methods of its use which often take place almost literally over night. So numerous are these changes, in fact, that unless an architect is specializing in buildings and other work in which concrete is an important factor it is hardly possible for him to be entirely in touch with the latest developments in its use.

For this reason, among others, published works upon the use of concrete are of immense value and importance to the profession. In the present volume Mr. Pond covers what constitutes the present basis for the use of concrete. He has divided the work into 20 chapters and under each of these headings treats of what is the most approved practice on the point involved. The book will be of great value to architects and engineers who are concerned with this type of building as well as to students of construction to whom it would be useful as a textbook. Excellent illustrations add to the book's value.

THE DAVANZATI PALACE, FLORENCE

A Restored Palace of the XIV Century, Measured and Drawn, Together with Short Descriptive Text, by

LOUIS CONRAD ROSENBERG

THIS work is issued to provide for architects, decorators and students a volume of moderate cost on one of the old Florentine palaces, a building which abounds in suggestions readily adapted to present-day work. The Davanzati Palace is one of the most notable of the early Italian palaces and belongs to a period when Italian architecture excelled in simplicity, charm, and all the qualities which lead to its use today.

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THE ARCHITECTURAL FORUM

VOLUME XXXVIII NUMBER 4

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ALBERT J. MacDONALD, Editor

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THE EDITOR'S FORUM

EXHIBITION OF SCULPTURE

THE National Sculpture Society of New York will hold an indoor and outdoor Exhibition of American Sculpture this spring in the galleries and on the terraces and grounds of the museums located at 156th street and Broadway. The Exhibition will include the works of the most distinguished contemporary American sculptors.

There will be a special press view on April 12, and a private view for which cards are issued will be held on April 12 and 13. On April 14 the exhibition will be opened free to the public, and will remain open until August 1.

FONTAINEBLEAU

THOSE in charge of registration of students for the 1923 session of the Fontainebleau School of the Fine Arts ask that prompt application be made, owing to the necessity of engaging in advance and at special rates the requisite ocean passage, of making the necessary arrangements at Fontainebleau, and owing particularly to the fact that the number of students is limited to 100. The session covers the three months from June 25 to September 25. Special courses under the direction of eminent French architects, painters and sculptors have been planned for these departments, and the courses will be supplemented by excursions under expert artistic guidance to chateaux, churches and other monuments of importance and interest in and around Paris. Applications from architectural students should be addressed to Whitney Warren, care Beaux Arts Institute of Design, 126 East 75th street, and from painters and sculptors to Ernest Piexotto, 215 West 57th street, New York.

COMPETITION FOR PLANS OF GOVERNMENT PALACE

THE Pan-American Union has received the rules governing the international competition for plans for the municipal palace to be erected in Montevideo, the capital of Uruguay. The palace will contain not only the offices of the municipal government, but those of the national government as well.

The competition will close on August 8, of this year. The winner of this competition will receive a prize of 10,000 pesos, the peso being equal to 85 cents United States gold. The second prize will be 5,000 pesos, and the third 3,000 pesos. The jury of awards has been authorized to divide an additional 5,000 pesos among other competitors, should their work merit this recognition. Complete details can be supplied by the Pan-American Union, Washington, by which the competition is conducted.

A TRAVELING SCHOLARSHIP

WITH a view to increasing the familiarity of architects with marble, particularly for interior use, the Alabama Marble Co. has completed arrangements for financing a traveling scholarship in architecture, to be administered by the Committee on Education of the American Institute of Architects. It might be pointed out that the same amount of money invested in some other way would probably produce a more direct and immediate return, but the establishment of such a scholarship for the study of the wider use of this material constitutes an effort of the most constructive kind, from which the entire marble industry is likely to profit. Details regarding the traveling scholarship may be had from Walter D. Blair, 154 East 61st street, New York.

STUDENTSHIP OFFERED TO BRITISH ARCHITECTURAL STUDENTS

THE success which has followed the development in America of certain forms of commercial architecture and buildings is of course due quite as much to the thorough understanding on the part of architects of such practical considerations as initial cost, probable revenue, depreciation, and costs of upkeep as to the grasp of the same architects upon the vital matters of design and construction. This success has not been attained without great cost, and to place at the disposal of British architects the knowledge acquired in America, Alfred C. Bossom, himself born and educated in England, has established a scholarship or "studentship," open to British architectural students, providing for a period of study in America.

The annual problem will be the designing of a commercial structure, such as an office building, hotel, apartment house or warehouse, for which the student must submit not only the designs but also estimates of cost, and a financial statement covering probable rentals and maintenance charges. The judges of these annual competitions will include a prominent architect, a builder, and a business man, and a silver medal will be awarded the best design from each school represented. From all the designs submitted a committee representing the Royal Institute of British Architects will select the winner of a gold medal and a scholarship covering a 6 months' sojourn in America for the further study of structures of a business nature. Details regarding the scholarship may be had from the Royal Institute of British Architects, under the jurisdiction of which the scholarship will be administered, or from the office of Mr. Bossom, 680 Fifth avenue, New York.

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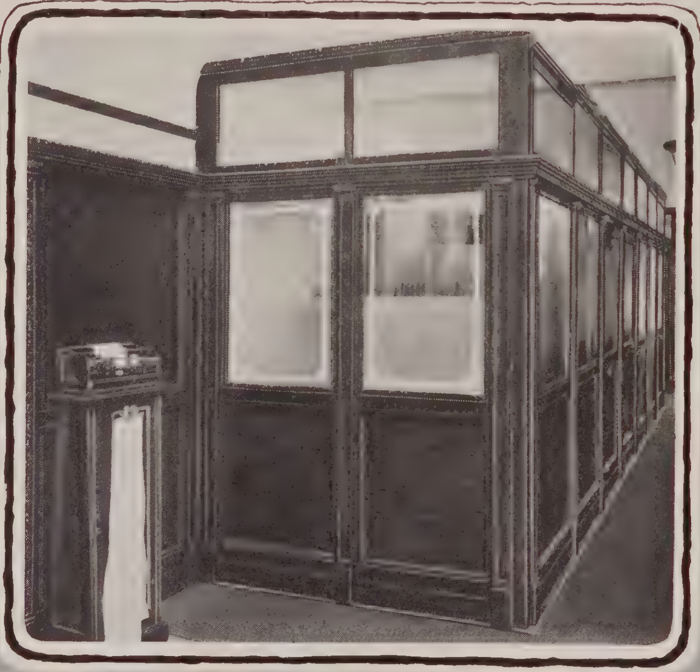

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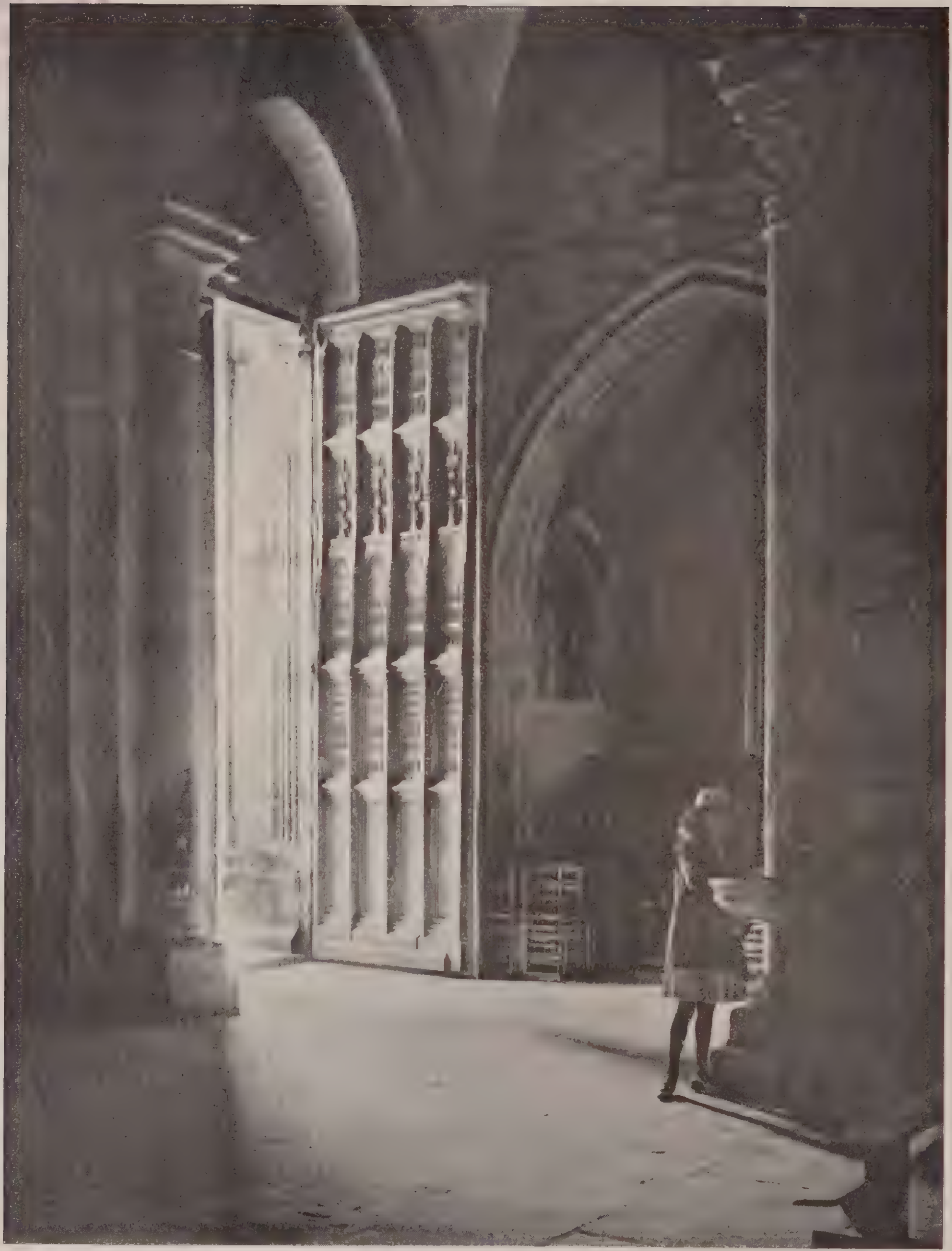


NORTHWEST DOOR, NOTRE DAME CHURCH
BEAUNE, FRANCE

FROM PHOTOGRAPH BY G. DOLBY

The ARCHITECTURAL FORUM

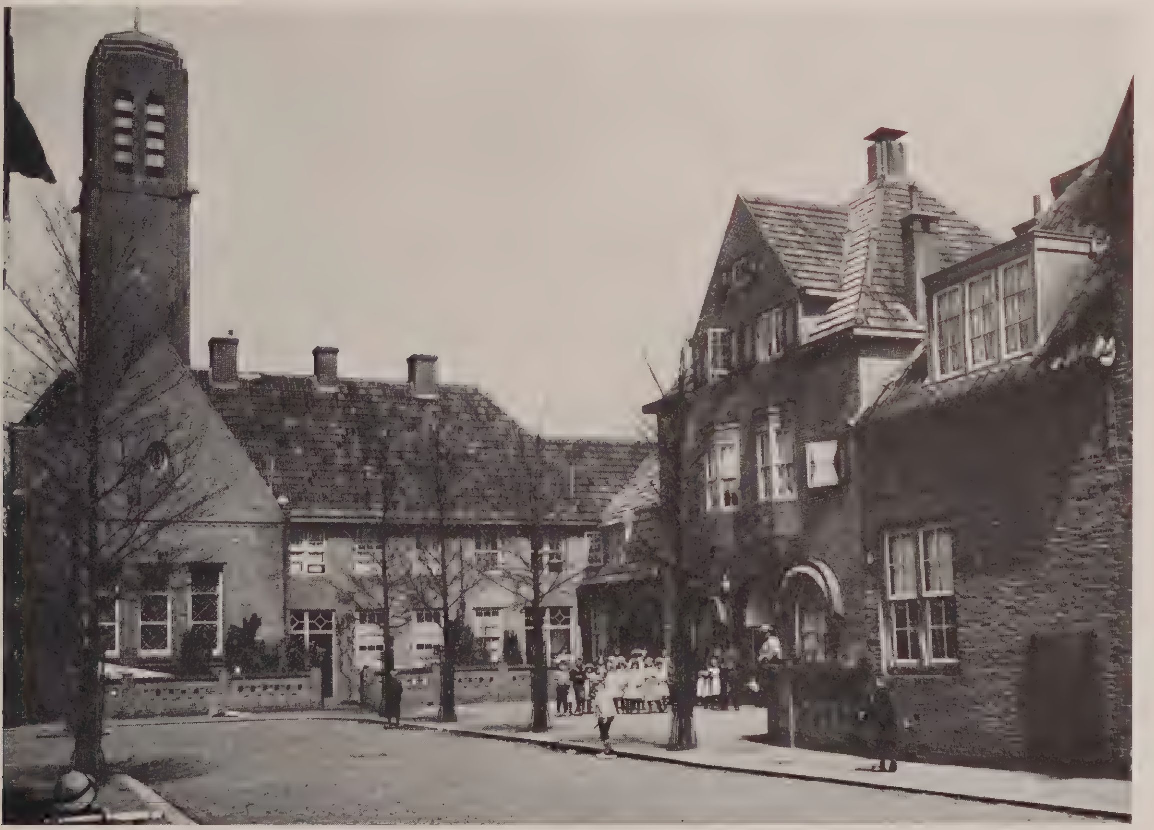
VOLUME XXXVIII APRIL 1923 NUMBER 4

Recent Housing in the Netherlands*

By EDITH ELMER WOOD

IT was the good fortune of Holland that she escaped being drawn into the devastating vortex of the world war. It is the great merit of Holland that she took advantage of her peaceful state and unimpaired finances to inaugurate and carry on a great program of social reform and human conservation, which will be reflected for years to come in lower death rates, healthier children and happier homes. The Dutch are a practical people, not easily stampeded into hasty action, and not easily turned aside when they have once decided upon their course. Their housing program is not an emergency measure, hastily adopted—not a flash in the pan resulting from popular clamor and the post-war housing shortage. It is a deliberate policy, worked out after years of thought, discussion and careful experiment on not too large a scale.

In 1901 Holland passed the most complete and compact all-around housing law that any country has yet put on its statute books. It touches all sides of housing, restrictive and constructive. On the restrictive side it establishes minimum standards of light, cubic air space and sanitation. It provides for the closing of unfit houses and for the clearance of slum areas. On the constructive side it provides



Street View in Heyplaat, Rotterdam, Garden Suburb for Employes of Rotterdam Dry Dock Co.
Mr. Baanders, Architect

*We are permitted to publish these extracts from the chapter on Holland in Mrs. Wood's forthcoming book on industrial housing in western Europe.—*Editor.*

Street View in Heyplaat, Rotterdam
Through archway showing street fountain and tenements

credit for building workingmen's homes to the extent of 100 per cent, on an at-cost basis. That is to say the national government will lend the whole construction cost, for a period of 50 years, to municipalities wishing to build working class dwellings, or to approved housing societies guaranteed by their municipalities. The rate of interest is the actual rate at which the government can borrow money on the Amsterdam exchange at the date of the agreement. In this most important provision of the act it will be seen that no subsidy is involved. There is still another source of credit,—Postal Savings Bank deposits, which play a useful, though a limited, role.

Town planning is obligatory on all communes with over 10,000 inhabitants, and the plan must be revised every 10 years. Administration is vested in a board of three with a paid secretary, which passes on all loans. There are provincial and local housing authorities, and the slothful ones can be compelled to act by those higher up. The housing societies played a much more important part in the early years than the municipalities, but the logic of events has worked the other way, and though the societies are as active as ever—indeed more so—the city housing departments are nearly everywhere outstripping them. In Amsterdam, where the societies have reached their greatest development, they are still in the lead, but the housing department is catching up.

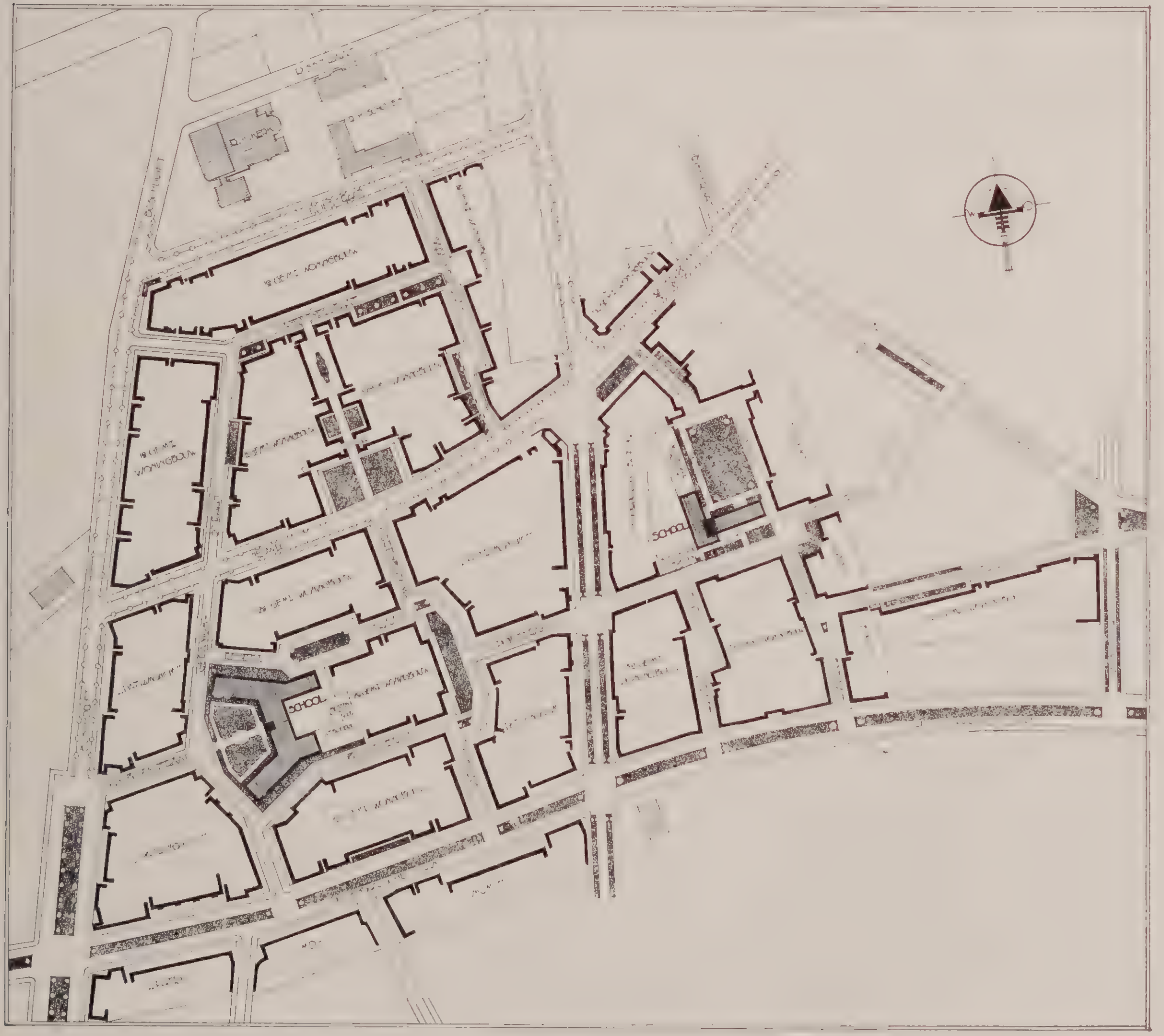
Dutch housing societies are, as elsewhere, of two sharply distinguished kinds—the philanthropic and co-operative. The latter kind in Holland is always a *tenants'* society. Home ownership is not an issue. The little that has been done in that way has been with the aid of loans from the Postal Savings Bank. In the villages and among the farmers more than half the families own their homes, whereas in cities of over 100,000 inhabitants only 6½ per cent of the dwellings are owned by occupants.

It is generally conceded that there are too many small co-operative housing societies in Holland—something over 2,000, I believe. It would be better in many ways (and certainly easier for the city housing departments, which have to supervise them) if the co-operators could be induced to

Patrimonium Court, Co-operative Housing Society Development, Amsterdam
Two-family houses with separate street entrances to each floor
Kuipers & Ingwersen, Architects

coalesce into a reasonable number of strong organizations. Work proceeded methodically along these lines until the second year of the war, but rapidly increasing costs brought things to a standstill by 1917 when subsidy division between municipality and nation was adopted. Payment of subsidy is conditioned on the charging of a "fair rent," which in Holland is officially held to be one-sixth or one-seventh of the family income.

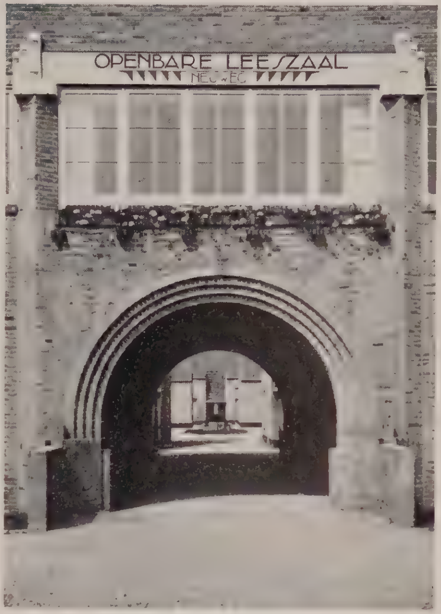
The Dutch prefer single-family houses where practicable, but the exaggerated cost of land on 30-foot piling makes it impossible to house the people of Amsterdam in this manner excepting in a few outlying districts. One of these lies to the north of the harbor, where a municipal ordinance forbids structures of more than 2½ stories. Here the housing department has erected an extensive garden suburb with 1½-story brick or brick and frame cottages in long rows, according to the Dutch custom, with little flower gardens in front, and often climbing roses over the doors, but with no vegetable gardens behind, because of the cost of the land. Most of these cottages have five rooms. All have sewer-connected toilets, running water and electric lights. The roofs are of red tile, and the woodwork around the doors and windows is painted in bright, cheerful colors. One notes in Holland a complete absence of shutters. This is an economy, for one thing. It would seem also to indicate a greater sense of security, and it carries with it a possibility of having fresh air in the bedrooms. Whether it goes farther than a possibility is another matter, for the built-in cupboard bed with closed wooden doors is still the favorite sleeping place of an appreciable part of the population. Its abolition is a live issue in the way of hygiene, and one of the rules regulating government loans and subsidies is that they cannot be had for houses containing cupboard beds. Adjoining land has been developed by a number of housing societies, philanthropic and co-operative. Large districts are built up in 2½-story, two-family houses. This is a favorite Dutch type. The street floor contains a four-room apartment. An entirely separate entrance leads to the second floor. This also has



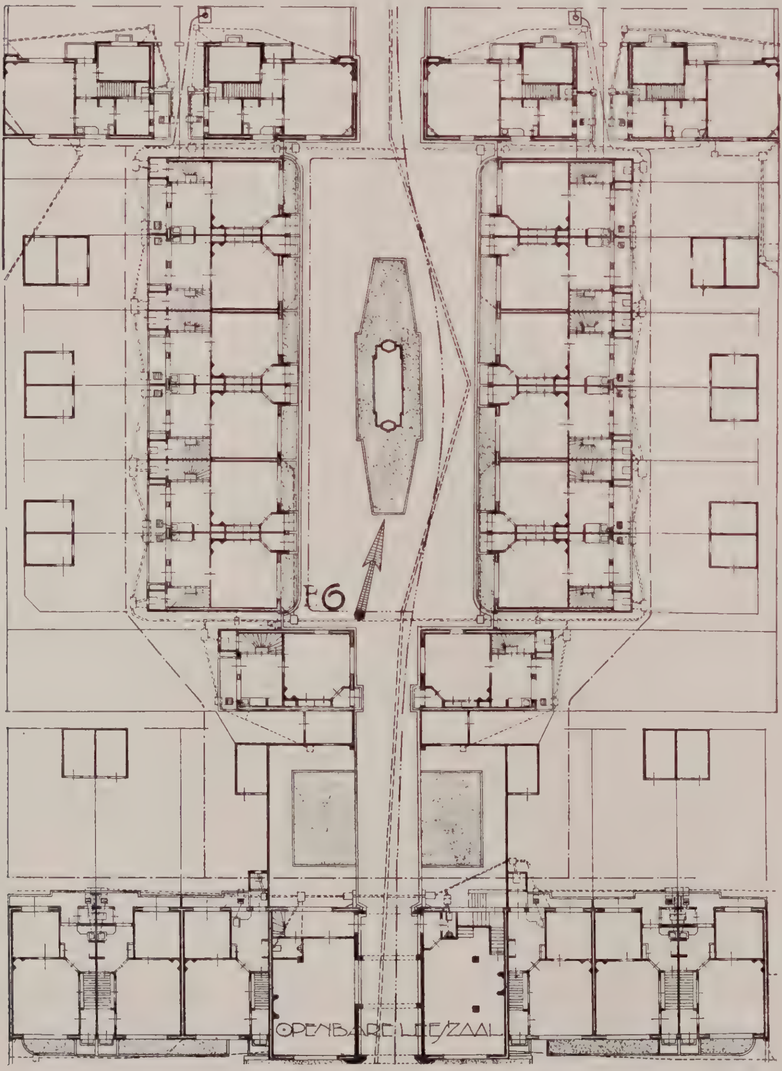
General Plan of Municipal Housing Development at Hilversum

W. M. Dudok, Architect and Town Planner

four rooms, but the second floor tenant has the attic in addition, which besides storage space, contains one or two finished bedrooms. There are no cellars in Amsterdam and few in Holland.



Entrance to Library
Showing full vista along main axis of plan below

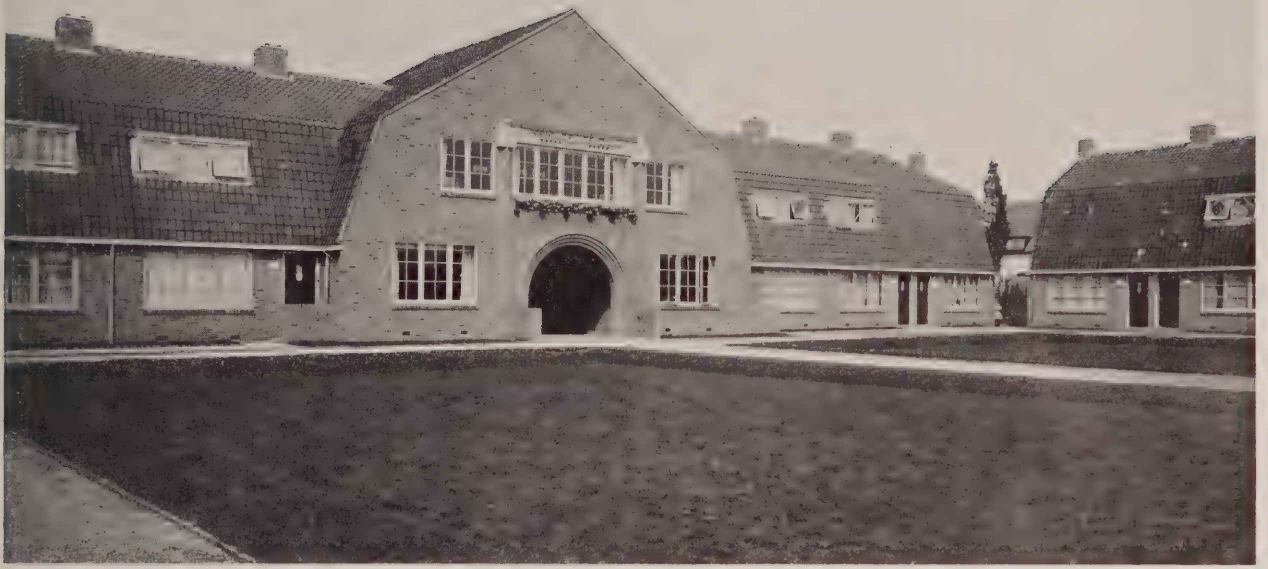


Detail Plan of Central Portion of Block at Northwestern End of Hilversum Municipal Housing Development

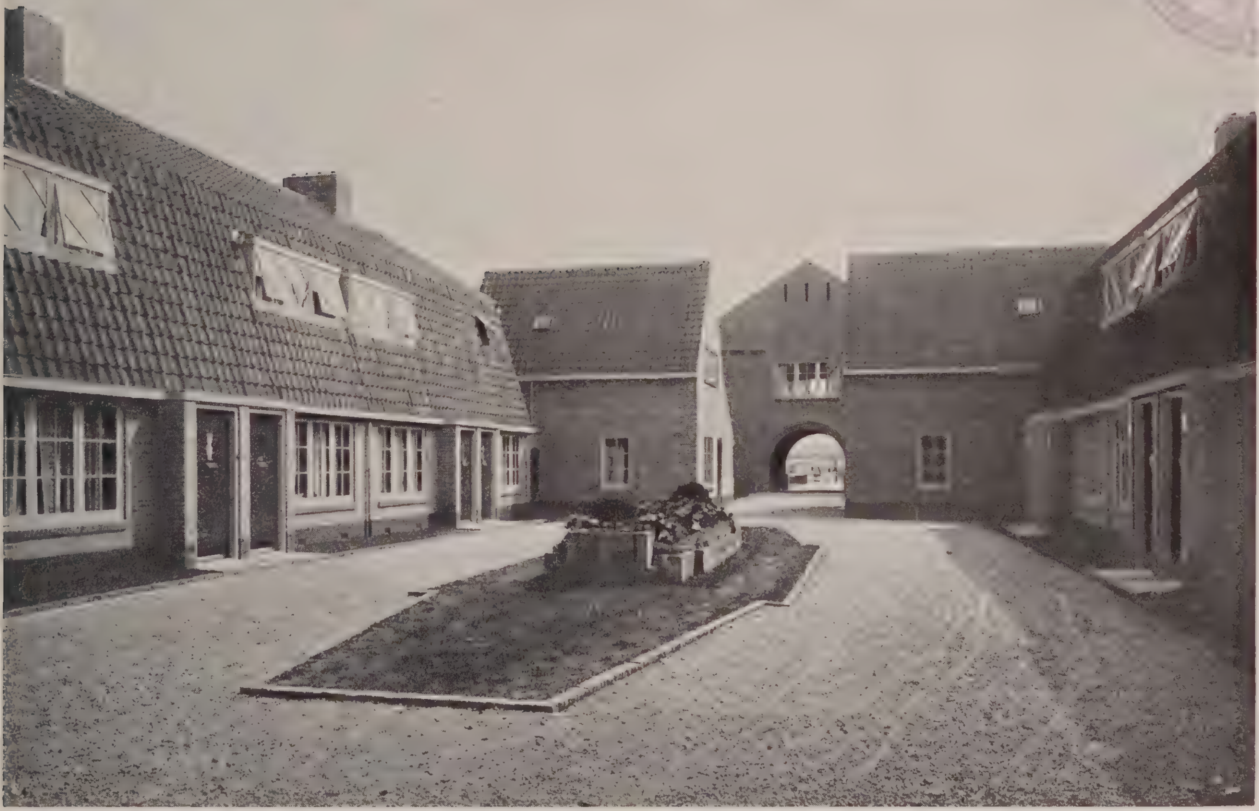
The young insurgents against tradition who compose the new modernist school of architecture, which has attracted so much attention, owe much to Mr. Keppler, the architect at the head of the Amsterdam housing department, for their chance to show what they can do. Many of them found their opportunity for self-expression in designing blocks of apartment houses for co-operative societies. Some of them have been employed by private builders to design middle class apartments. A whole extension at the south of the city, block after block, street after street, is being filled with them. This would seem to indicate that the new school has struck a genuinely popular chord. Speculative builders, as a class, are not strong on Art for Art's sake. To the credit of the modern school, it must be said that it has discovered (or rediscovered) the beauty of plain wall surfaces, that it masses its windows instead of sprinkling them, and that it treats the backs of houses and the interiors of blocks as carefully as the street facades. It is a characteristic of the school (whether a merit or not, I do not pretend to say) that it revels in horizontal lines and flat roofs, but unless well handled they are likely to produce monotony.

On the other hand, it sometimes seems to my unenlightened lay mind to be straining to make bricks and mortar do things for which they are essentially unfit,—to make them curve and billow and cascade,—even to "symbolize the rapid movement of modern life,"—as if it weren't bad enough to have to run after street cars oneself without going home at night to a house which appears to be doing the same thing! In any group struggling for new forms of expression, since genius is scarce and talent unevenly distributed, many who aim at originality achieve only eccentricity. "But it is the artist's business to externalize his dreams," a distinguished exponent of the school said to me. And the Puritan in me could not help replying, "If he is going to externalize them in houses, which someone else has to pay for, and the taxpayers have to subsidize, and men, women and children have to live their lives in for the next 75 years, then he has no moral right to indulge in nightmares."

I am afraid I shall be suspected of being too elderly to appreciate modern Dutch architecture if I do not hasten to describe a place where I enjoyed it wholeheartedly. Hilversum is a residential suburb of Amsterdam, 18 miles distant, with



VIEW IN FORECOURT OF NORTHWESTERN BLOCK, WITH LIBRARY IN CENTER



VIEW OF COTTAGES IN QUADRANGLE, LOOKING TOWARD LIBRARY

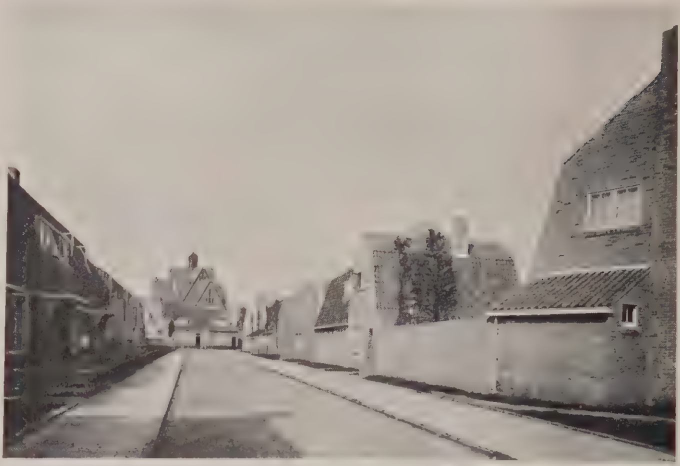
MUNICIPAL HOUSING DEVELOPMENT AT HILVERSUM, HOLLAND

W. M. DUDOK, ARCHITECT

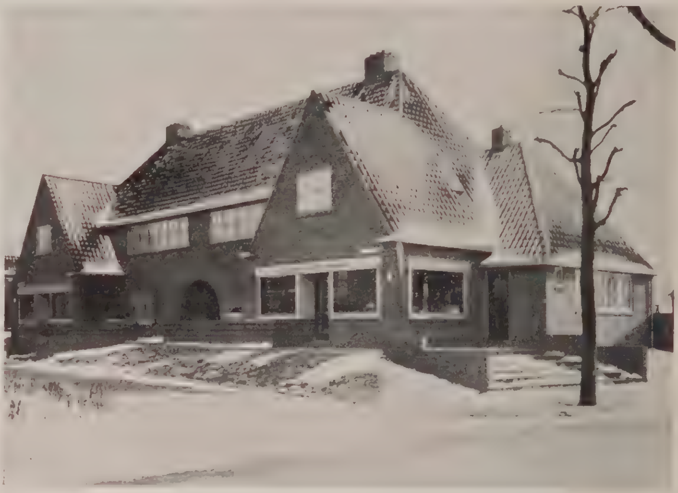
about 45,000 inhabitants. But in addition to its homes of prosperous Amsterdam business men, it has woolen mills, perfume distilleries, and some other industries, and consequently a considerable working population. For them the city has undertaken an extensive building program, which is being carried out by its director of public works, W. M. Dudok, who is a well known modernist architect.

Seven hundred 1½-story cottages have been built on a very irregular tract of land already owned by the city, surrounded and even penetrated by other buildings, making a difficult problem for the architect, which has been treated with much skill. The settlement is grouped around four centers, each with a distinctive character of its own, yet harmonizing with its neighbors. The principal center is about a large school building with outspread, protecting wings and a tall square clock tower which dominates—and keeps guard over—the whole community.

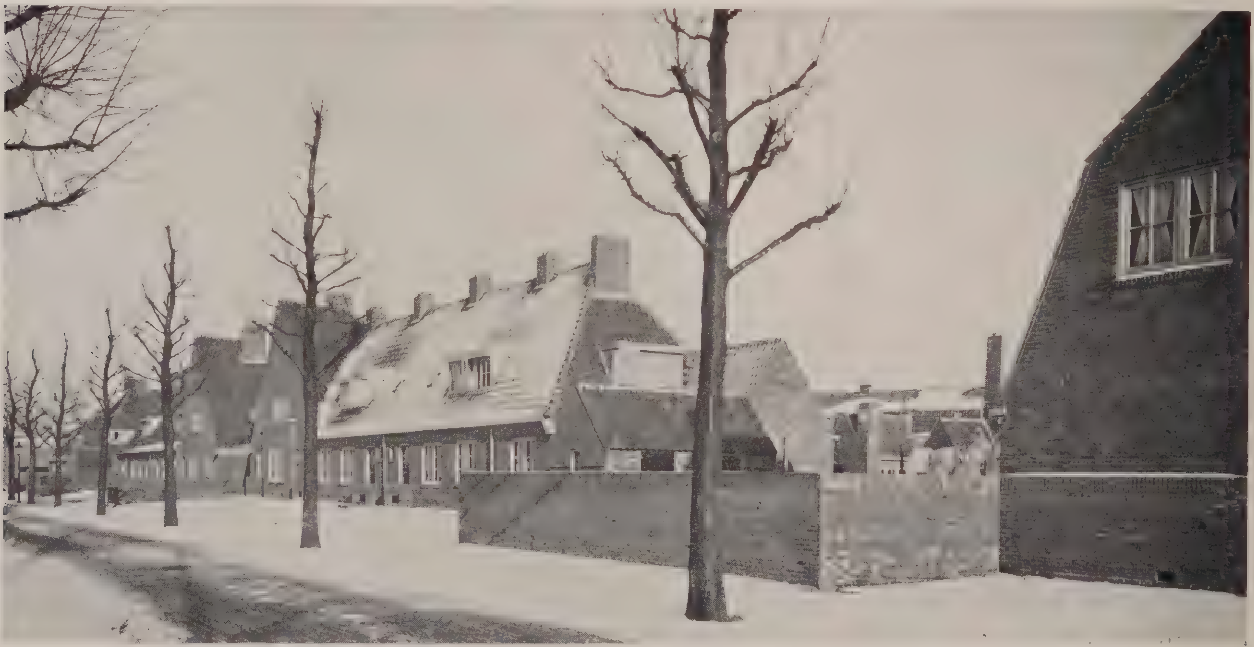
Two other centers contain schools, one a business high school with a quiet blue and gray interior color scheme, calculated to soothe the sensitive nerves of adolescence, the other for little children,—wonderfully gay inside with the tulip colors the Dutch love so well—brilliant yellow walls, brilliant green paint on doors and window frames, with sash curtains of red and white checked gingham, and with red geraniums growing in pots. The fourth center is a singularly peaceful little quadrangle behind the public library. Old people and childless couples are largely lodged there. Big families with romping



View along Geranium Street, Showing Vista Closed by Hilversum Church



Store Group with Small Apartments on Second Floor Served by Main Entrance



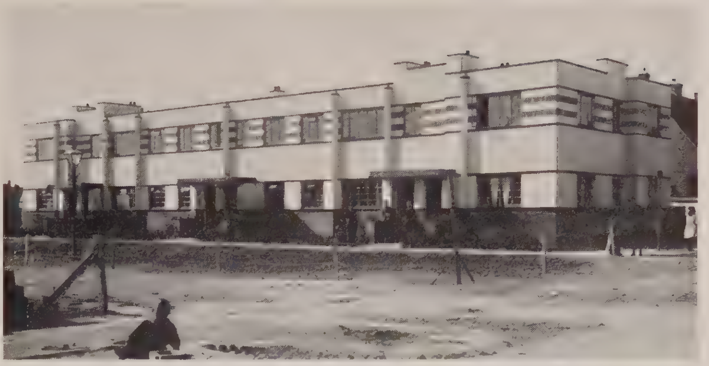
Group of Houses with Enclosed Gardens along Boschdrift, Hilversum
W. M. Dudok, Architect

children congregate elsewhere. The coloring is quiet and restful. The library and reading room are over a large round archway leading into this sequestered spot. A straight opening between houses leads out at the other end. Looking from in front of the library through the circular arch, past the lozenge-shaped bed of dark green shrubbery in the center of the quadrangle, through the straight opening beyond, the eye rests on a pair of cottage doors on the opposite side of the transverse street, painted a vivid parrot green and surmounted by a long slope of red tile roof, behind which in the distance rises the old Hilversum church. The effect is startlingly decorative and wonderfully picturesque.

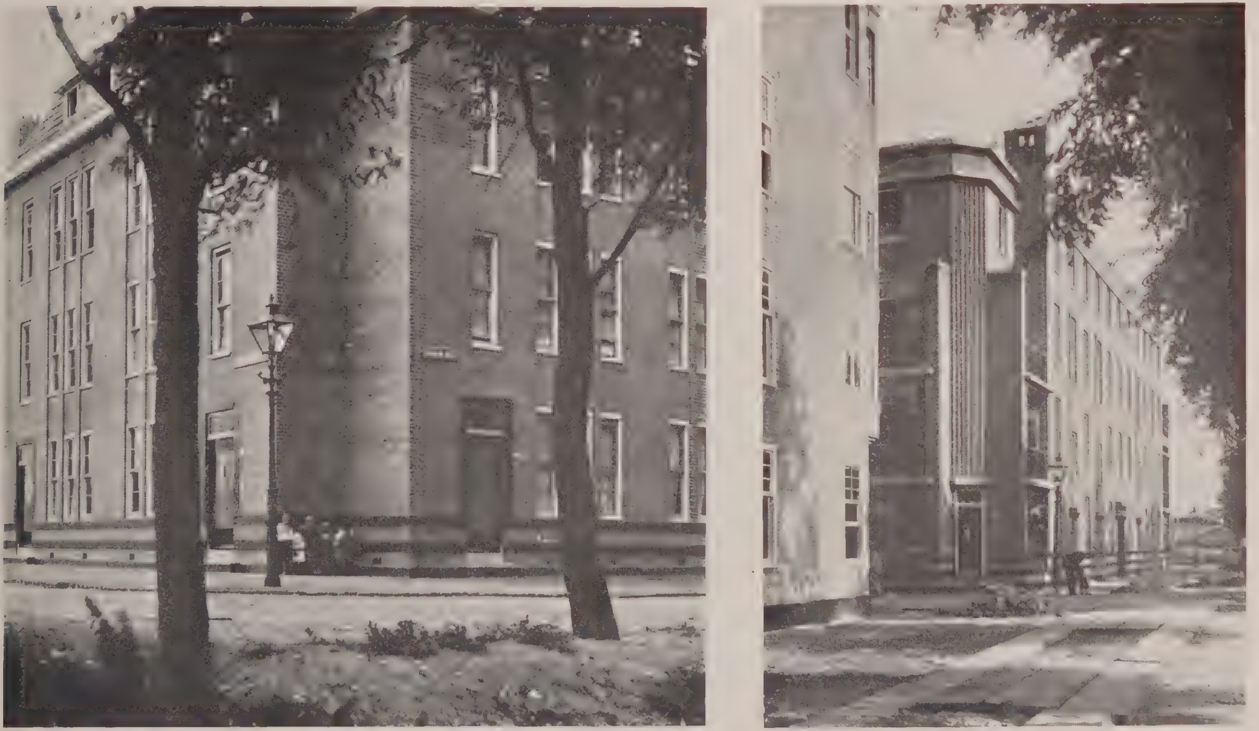
Near the tulip-colored school is a public bathhouse with flat roof and plain brick walls, which first gave me the cue for which I had half consciously been groping. What was it these Dutch modernists reminded me of with their horizontal lines and unbroken wall surfaces? Why, Egypt of course! They think it all comes out of their ultramodern inner consciousness, but it doesn't. The brown skinned architects of Karnak and Luxor dreamed the same dreams three thousand years ago. Be that as it may, the cottages of Hilversum are not Egyptian, but Dutch,—thoroughly and essentially Dutch,—and that is why I like them so much. They preserve the red tile roofs of Holland and the traditional aspect of a Dutch cottage, than which no more peaceful, homelike, wholesome type exists. Why should a country blessed with red tile roofs want to trade them off for our ugly flat roofs?

Mr. Dudok apparently does not, but he varies his tile roofs astonishingly. Some have only a moderate pitch; others slope steeply, and others still are bent to form mansards. They are built in rows, but the rows are broken, here by a pair of steep gables, there by a change in the setback. Excepting for some experiments on the first few streets, the walls of all the dwellings are of plain red brick. The Hilversum brick is of a dull shade, almost grayish below the deep red of the roof tiles. But the doors and window casings afford a chance for brilliant and beautiful color effects. Deep green and bright orange are the favorite colors, set off by narrow lines of black. It is surprising how much character these black lines add.

The strangest thing is the way you can depend on Dutch housewives to hang just the right shades of curtains in the windows and to plant just the



Municipal Concrete Houses, Rotterdam
Mr. Van Hardeveld, Architect



Details of the Large Tenement Blocks Built in the More Intensively Developed Areas of Rotterdam
T. T. P. Ond, Architect

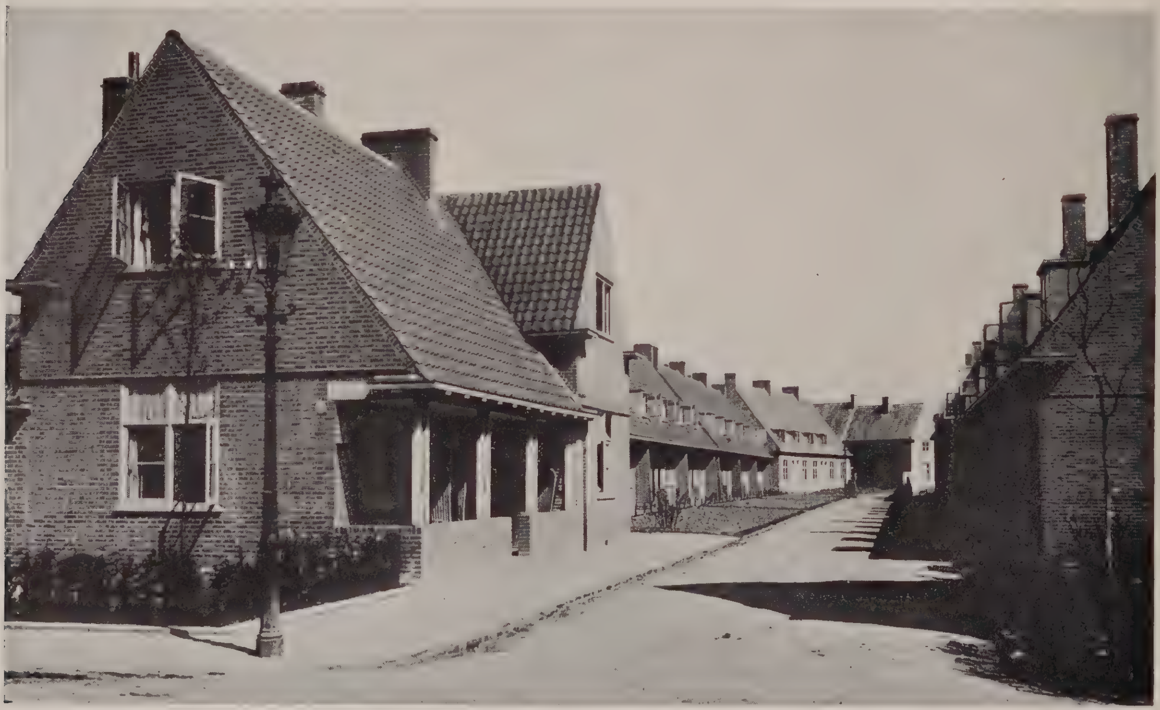
right shades of flowers in the tiny garden plots. Not one of them trains crimson ramblers around those orange and black window casings or plants purple petunias in the beds. No, they plant masses of flaming marigolds, and their little boys and girls wear knit scarfs and caps of the same vivid greens that adorn their doors.

Wherever one goes in the Hilversum garden suburb there are vistas, interesting both in form and color,—a great deal of variety with complete, essential unity of style and purpose. All this has been brought about by the use of very simple and inexpensive means. The varying angles of the roofs, the heights and widths of chimneys, the sizes and groupings of windows, the shapes of the window panes, the treatment of front doors, the occasional use of a low brick wall on the boundary line,—these and a hundred other details have been employed to bring about the desired effects. The final, acid test of the merit of the Hilversum cottages is, to my mind, that the working people for whom they were built have never for a moment been subordinated to æsthetic considerations, and expense accounts have been so carefully watched that after completing the 700 dwellings planned there remains a surplus which will permit continued building. The beauty of it is therefore a free gift. Not a single family less gets a new house because of it.

Rotterdam has a very strong philanthropic housing society which has constructed a whole garden suburb, with some 3,000 red brick cottages at Vreewyk, which means "Place of Peace." It lies to the south of the river Maas, the main part of the city being on the north bank. I visited one cottage of the largest type, containing parlor, living room, kitchen and four bedrooms, one of them in the mansard. It was occupied by a family with seven children, and the rent was only 5 florins ($2) a week. I noted a generous supply of closets and cupboards. Contrary to popular impression, which I used to share, large families are not prevalent in Holland. The average number of children per family is less than three, and the number is decreasing.

The streets of Vreewyk are straight, but the layout is not that of a gridiron. The cottages are in rows, but considerable care has been taken to avoid monotony, and open places with shrubbery and trees are frequent. Sometimes the houses are built directly on the sidewalk, and sometimes there is a setback with a bit of greenery. On east and west streets this is found on the south side of the street only. I had noticed the same thing in Amsterdam. It was pointed out to me (1) that flowers do not grow well on the north side of the street, (2) that no garden at all looks better than one which is ragged, and (3) that the amount of money saved, in view of the cost of land, is really worth saving. In Holland the smallest bit of land is valuable.

A housing trip to Rotterdam would be incomplete without a visit to Heyplaat, a garden suburb built for its employes by the Rotterdam Dry Dock Company shortly before the war. It contains about 400 brick dwellings, a square with a bronze fountain, and a picturesque archway, with single rooms for bachelors over it and a restaurant adjacent. There is also a kindergarten from which were emerging, when I was there, as plump and rosy a set of youngsters as one could wish to see. Heyplaat has been built long enough for trees and shrubbery to be well grown.



A Street of Red Brick Cottages in Vreewyk, Rotterdam
Grandpré Mollière, Architect

High Buildings and Beauty

PART II

By IRVING K. POND, F.A.I.A.

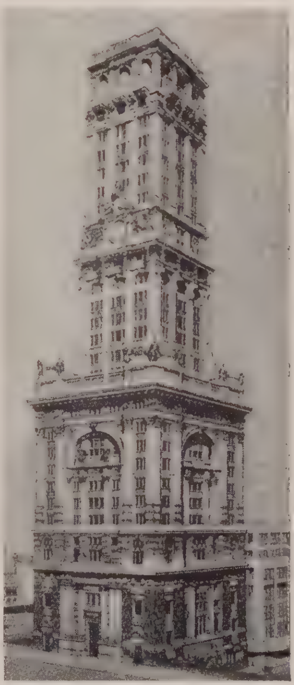
THIS article completes Mr. Pond's consideration of high building design with special reference to the recent *Chicago Tribune* competition. For the convenience of the reader we have repeated in this paper some illustrations from the first article (February, 1923) referred to by the author.—*Editor.*

IN continuing my comments upon designs and types of design submitted in the competition for the proposed home of *The Chicago Tribune*, I wish to discuss the attitudes of mind and the avenues of approach displayed, or at least seemingly displayed, by the competitors.

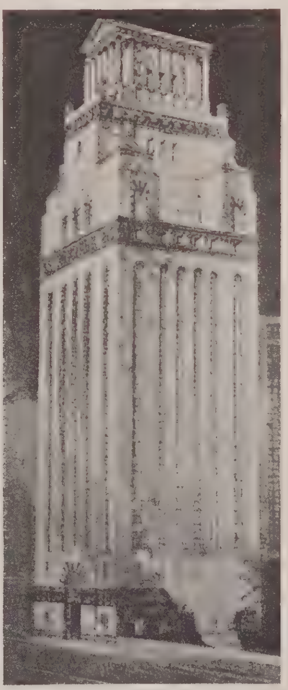
All, as I have said, considered extreme height as a necessary concomitant of beauty,—for in this competition beauty alone was sought,—and, therefore, at least one setback was demanded by the exigencies of the case; for above a certain fixed limit of height, and that evidently not commensurate with the requirements of supreme beauty, the local building ordinances restrict the area and use of the structure. The setback, or rather offset, under the present local restrictions need not necessarily occur on the principal front,—it may be on one, two, three or four sides of the superstructural embellishment and determined only by the character of the design or the whim of the designer. Thus designers in certain northern European countries effected the diminution of area by means of steeply pitched roofs presenting high, sharply pointed gables to the street after the fashion of the cottages and lesser buildings of their own immediate environments, betraying in this way certain of the racial limitations to which I referred in my preceding paper. A Roman designer who presented a rarely brilliant rendering in pen and ink, shot his tower without transitional steppings up out of the center of a cubical mass. His offering both in rendering and design carried the evidences of his race and training, and displayed his limitations in the presence of such a problem.

Let me dispose in a few words of one factor which, as I have already indicated, influenced the attitude of many of the competitors toward the problem; that was the publication by *The Tribune*, before and after the competition was instituted, of examples of existing buildings, with the suggestion in each particular instance that the type therewith presented might form the basis of the future *Tribune* design. Not once, I am quite certain, was it even suggested that the problem of *The Tribune's* office building might be solved on its own merits, and therefore designer after designer ignored a logical and straightforward solution in order to superimpose upon an office building some feature, like a mosque, an oriental tomb, a Greek temple, a Gothic chapel or a laminated Italian tower, hoping thereby to gain *The Tribune's* favor. Sometimes this superimposition struck a note which was echoed through the substructure and produced a semblance of superficial harmony; at other times, notably in the case of the design placed third, it did not. Perhaps I might better have said a "superficial semblance of harmony," for while there was a semblance of harmony on the exterior it was superficial only and did not run through and permeate the structure and bring it thoroughly into accord with the fundamental purpose of the building, and without this there can be no true harmony—no true beauty. It was a blessed relief, in viewing the pictorial presentations, as it surely would be in viewing buildings erected in consonance with them, to turn from the superficial applications of Byzantine and Aztec and Gothic and pseudo-classic and claptrap to the subtly modulated, harmoniously inter-related and loftily conceived second design.

There were two very distinct avenues of approach to the solution of this particular problem, as to that of the lofty steel-framed structure generally, which were traversed by designers according to the individual attitude of each toward an ideal of beauty; and there were designers, many of them, who tried to tread in both of these paths at the same time—and made a mess of it. The author of the design placed first tried and came out pretty well, consider-

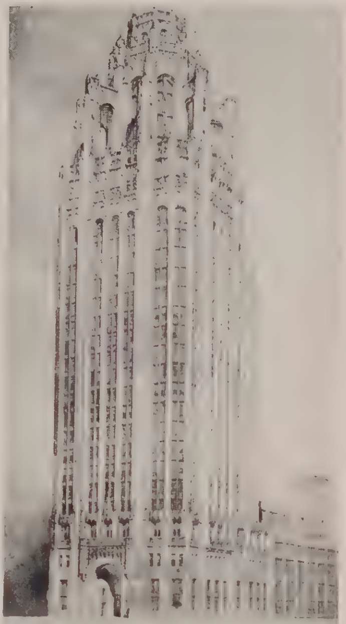


Design Submitted by
Prof. Giuseppe Boni
Rome



Design Submitted by
Frank Fort, Architect
New York

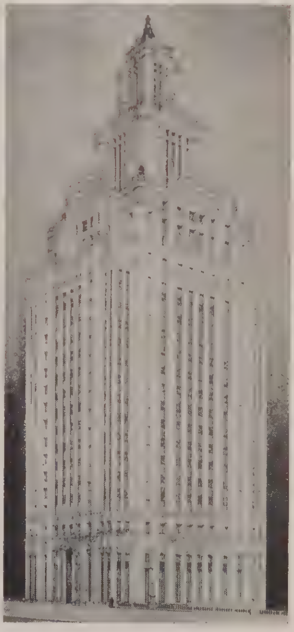
ing. One of these avenues is to treat the entire structure as a masonry design, ignoring absolutely the steel skeleton; the other is to recognize the character of the structure and give it expression in the external forms. Of the latter, I find the design placed second far and away the most satisfactory. Of the former, it seems to me that the design submitted by Bertram Goodhue is the most refreshing and carries the most of charm. With its logic I disagree, as with the logic of all its sort. Others do not so disagree and will enjoy all phases of the design. The design placed first is, at first blush, almost of a pure masonry type, but soon scale and mass and dimensions proclaim the presence of steel while dominant forms deny it. I am not insensible to the charm of the outline and the richness of composition as displayed in the drawings. I recognize the harmony existing between the octagonal crown and the substructure with its chamfered corners, and I recognize that the round and segmental arches have saved the design from a banality which pointed arches would have conferred upon it. But to me it feels structurally impossible, while the restlessness of its crowning feature with the arched buttresses, in spite of a seeming poise, disturbs me. The great piers of masonry rise "four square" with the walls, above which they must be skewed to meet the direct thrust of the arches, or the arches on the axes of the octagon must meet the piers at an angle; in either case there is imparted a sense of restlessness.



First Prize Design
John Mead Howells and
Raymond M. Hood, Associated

I am going to take the liberty of quoting the appreciative criticism of this design from one quite competent to judge, from one whom I would perhaps consider the most competent. The author of the second prize design in a private letter, since published by *The Chicago Tribune*, says: "As far as I am able to judge from the pictures that are at my disposal, the project submitted by Mr. Howells is very successful. It is strong and whole in form and proportions and displays a beautiful and, at the top, well rounded outline, at least as it appears on the perspective drawing. It is possible that the project will not give the same whole impression at close range. I fear that the top will sink down and the flying buttresses surrounding it shoot up too high in the sky, and thus cause the outline to be meager and broken. In my opinion an important principle in the designing of a skyscraper is that the top is formed so that the logical construction can be followed by the eye in all the different parts of the building clear up to the highest pinnacle, not only from a longer distance but also at close range." Please underscore, in your mind's eye, that last sentence; I shall use it later as a text. And now let us take stock of the comparatively few, in all the number of designs submitted, which can make any pretension whatsoever to a possession of architectural merit. Let us study the psychology of their designers and determine if we can, and if we cannot determine to our satisfaction, let us wonder at least "how they get that way" in this "land of the free and home of the brave." We must absolve in a way a very small element, best represented, perhaps, by an example from San Francisco and another from the university town of Ann Arbor, for these designers sought to solve the problem on its merits and came to it with independent minds restricted only by the seeming necessity for height and setbacks. If buildings were only elevations on paper these, as many another of the solutions presented, would have been very satisfactory—the lines in elevation soared beautifully from the base to the pinnacle. But unfortunately a real building has three dimensions, and the object of this competition was to get a real building—to get a beautiful building, and not necessarily (as is announced generally in competitive programs) an architect to actually supervise building.

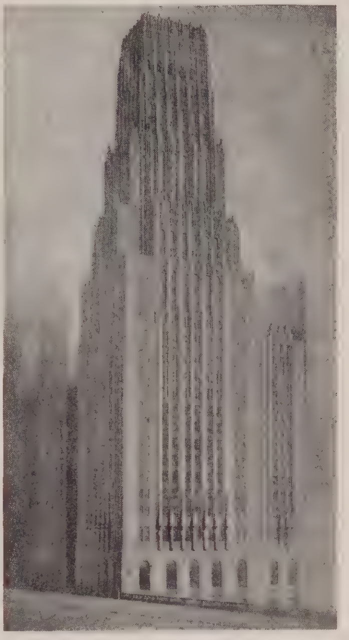
A certain other large class came to the problem limited not only by the seeming necessity for height and setbacks, but with their minds gripped in the



Design Submitted by
Weeks & Day, Architects
San Francisco

Third Prize Design
Holabird & Roche, Architects
Chicago

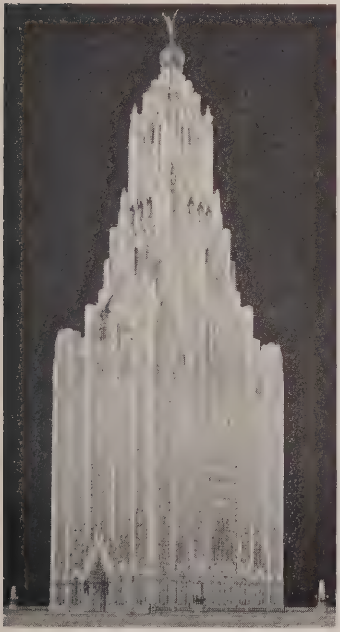
strangle hold of conventional forms—Gothic, classic, oriental—and so did not see the inherent possibilities at all. We all know how such minds react to any architectural proposition—our streets are lined with their stupidities. And then comes a larger class which interests the more because they seemed to sense a special problem in what *The Tribune* had set before them, and they were bound to tax their sociological and architectural experience and observation and their highly conventionalized minds in an attempt to visualize what seemed to them the public's latest dictum as to beauty; in other words, they wanted to materialize a popular conception of beauty. Well! how to do it?—how to get at it? Fortunately, a starting point had been provided, one for the classicist and one for the Gothicist. The Nebraska state house tower, essentially classic in its topping out, had met, seemingly, yes, assuredly, popular and professional favor; while for the Gothicist there were the towers of the Harkness memorial—the best advertised and exploited and admired group of the decade. Here were the necessary elements, height and materialized concepts of beauty, all ready to hand! The only problem for the competitor, then, seemed to be how to place these towers on top of an office building or how to envelop their shafts in an office building and still minister to the eternal harmonies—a problem difficult indeed.

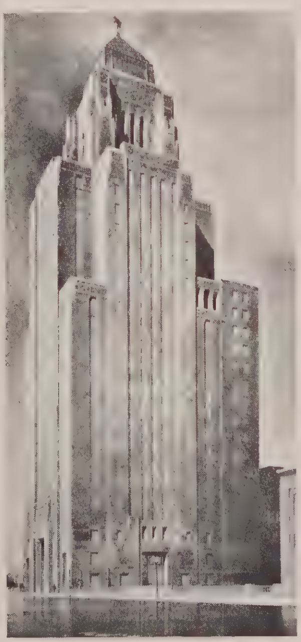

Second Prize Design
Eliel Saarinen, Architect
Helsingfors, Finland

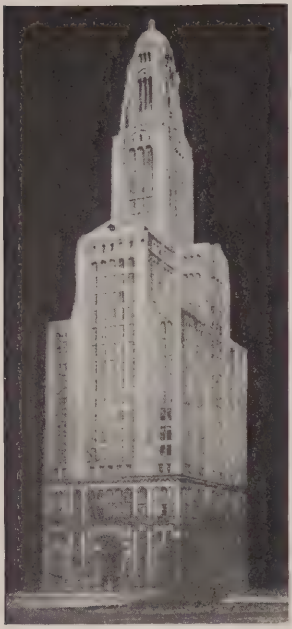
One designer, who won an honorable mention (not so much of an honor in this competition, as it was given to all but one of the paid competitors, and to at least one other from each of the 22 countries represented, regardless of merit, and to several others), arguing to himself that if one Harkness tower were beautiful, two would be twice as beautiful, slipped the Boston tower down through the St. Giles of Wrexham, punched the latter full of office windows, modified the pinnacles a bit, and let the transition take care of itself. In fact he made more modifications than I have indicated, but in essence I have outlined his psychological reaction to the problem.

Now this same restricted attitude of mind in the presence of a living modern problem shows itself in several similar designs, and even in that placed first. These other designers were not content with letting the transition take care of itself, but sought to effect it harmoniously by developing flying buttresses or introducing traceried screens between the pinnacles or piers and, in the case of the design placed first and in one or two others, by incorporating both features into the composition. As I indicated in the earlier article, most of the real work on many of the designs in this competition consisted in trying to effect some scheme of transition between the office building beneath and the beautifying object above. Precedents—real *bona fide*, established precedents—were wanting, and the architects had almost to use their brains. What has happened to all our architectural schools that they have given us no formulæ to apply in such a case? But, seriously, why have the schools not taught something of the value of outline—of contour against the sky—where the building must be made effective when viewed near at hand and also at a distance? I fear that, after all, it is not a matter of teaching but a matter of feeling, and that one who fiddles away his life on forms of petty detail cannot bring himself to feel in terms of mass. Of all the conventional types presented, the design placed first was the most successful in the larger mass, though I feel, as must have felt the authority I quoted, that it is too much a draftingboard mass and too little a structural mass.

In numerous instances in which the setback was featured in an endeavor to effect a graceful transition, the great value, in fact the absolute necessity, of vertical continuity to a unified and altogether beautiful composition was lost sight of. The ratios of setbacks to corresponding verticals resulted in


Design Submitted by
Albert J. Rousseau
Ann Arbor, Mich.

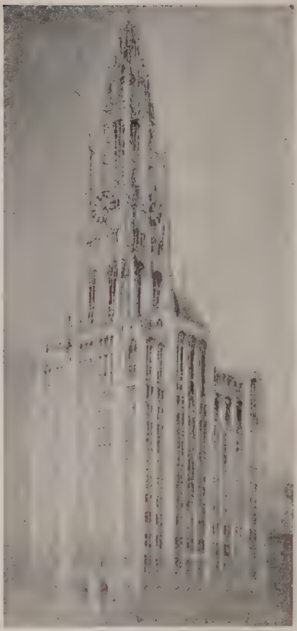

Design Submitted by
Bertram G. Goodhue
New York



Design Submitted by
Butler & Corse, Architects
New York

a sharply concave form, so sharply concave that the form would be lost to view excepting at a considerable distance or from a high elevation, and the tower or crowning feature if seen at all would be seen as a detached object and not in its proper relation to the mass. Cutting out the corners has served to obviate this difficulty and is used to good effect by both Mr. Saarinen and Mr. Goodhue. Some of the designers seemed to argue about setbacks as the man mentioned did about the towers—if one were beautiful, then more would be proportionately more beautiful; and so we find instances where setbacks bob in and out and up and down in bewildering profusion. Mr. Saarinen in the design placed second has demonstrated, as I tried to do in my book, "The Meaning of Architecture," the value of the cutout corner in giving the effect of verticality—of vertical movement—combined with poise and stability; and showing, too, the harmony which results when the same principle is applied to constituent piers and lesser elements of the mass. I wish that the interested reader would follow the lines of the corners in Mr. Saarinen's design and compare them with the lines in Figs. 21 and 24 in my book, especially in Fig. 24, which represents the tower of the University of Michigan Union at Ann Arbor. It is because the editor of THE FORUM originally asked me to continue my article on the effect of zoning laws upon high buildings along the lines of the theory of modified verticality laid down in my book that I take the liberty of mentioning it here and inviting a study of it in connection with the discussion of the matter in hand.

There were square yards of beautiful draftsmanship displayed in the contributions to this *Tribune* competition. There were extremely few designs which gave any indication that their authors had any deep feeling for structure or knew in the least how their designs would look in execution. Some designs which looked free and even airy in the drawings would have been hard as nails in materialization; like the vaporous spooks at a seance they would have proved gross material if poked with the finger of flesh. And some were humorous—humorous to a degree—not intentionally so, perhaps, as those contributed by *The Tribune* cartoonists, from which they could with difficulty be distinguished. In fact viewing the results as a whole it does not seem that this competition could have been taken seriously. It seems to have been regarded as an opportunity to do stunts of design, but more particularly of draftsmanship, expecting,—if there were any expectations at all,—that a non-technical jury would fall for something flashy, and that lightning might knock down a $50,000, or a $20,000, or a $10,000 plum into an acquiescent if not altogether deserving pocket. There were certain competitors who took themselves too seriously — seriously enough to be comic and to gain honorable mention. There was only one, and he an alien, who grasped the problem in all its essentials. The work of the other foreigners was scarcely on a par with that of the natives. Where was our native idealism? Where was the bold, free stroke of the American? Why did every American who had technical control, with but one or two exceptions, couch his thoughts in terms of Europe or the orient? There were, besides these two or three, several who struck out along individualistic lines, but whose work, whether or not definite and coherent, was alien not only to nationality but to the realm of pure design.



Design Submitted by
James Gamble Rogers
New York

There is, floating about somewhere in the limbo of abstractions, an American ideal. It has not as yet been caught and distilled; at least the results of this competition would seem to indicate that the native designer had not as yet clothed the spirit in flesh. The man from Finland came closest to it, in his intentions, idealism and conception of beauty.

Is there no American as American in his feelings as the man from Finland appears to be? What has straight-jacketed us and left us powerless to move excepting in conventional channels? Is it the schools?—is it fatty degeneration?—is it prosperity?—is it inertia and lack of initiative?—is it a numbness in our sensatory nerves? Something is the matter with us, as the results of this competition serve to show. Again—just to think of it!—unlimited millions at our disposal with which to produce sheer beauty!—and when the results were not plain, everyday "commonplace" they seemed to be factitious combinations of copy plate features. Think of it!—unlimited millions with which,—but this isn't intellectual criticism and analysis;—it's just emotionalizing against the seemingly inevitable, and I'm going to stop it—and give my readers a chance to think.

Recent Dormitories at Smith College

J. W. AMES, K. S. PUTNAM AND E. S. DODGE, ARCHITECTS

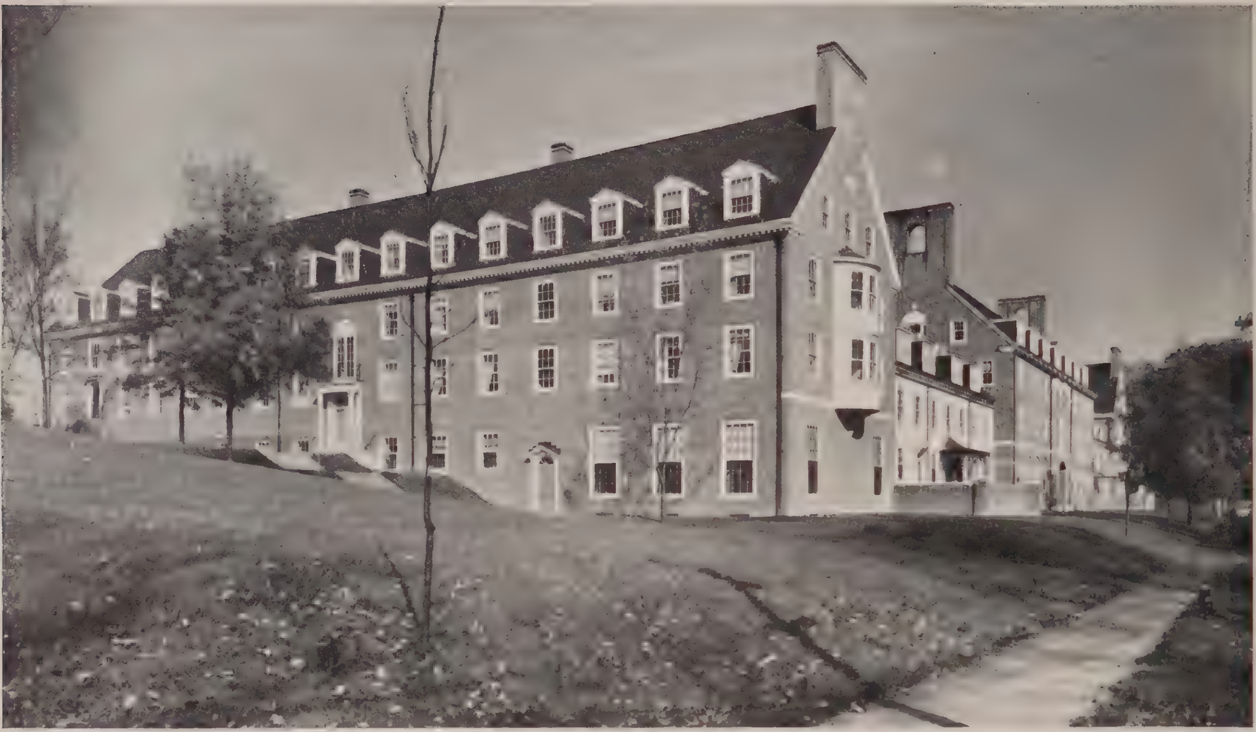
THE several dormitories recently completed for Smith College, as an investment of part of its endowment fund, are of interest in various ways, for in addition to representing an unusually successful solution of the college dormitory problem the buildings are planned to aid in carrying out certain well defined social policies which prevail at Smith.

The three buildings illustrated in these pages are the nucleus of a large group and form half of a projected quadrangle, the remaining half of the quadrangle shortly to be built. This quadrangle divides into two sections an alley, which bi-sects the group, and at each side of the quadrangle and fronting also upon the alley there are to be two additional courts or minor groups, each built about three sides of a square. This group of 15 dormitories, three of which, as just said, have been completed, occupies what was known as "Allen Field," the central part of which was a large bowl approximately represented in this group by the quadrangle. The tract involves a considerable slope, and there is accordingly a difference of some 10 feet in grade between the quadrangle and the North alley and its two courts, and a further difference of 15 feet between the quadrangle and the grade of the South alley and its buildings. The character of the building site was therefore such that to plan and group successfully the number of buildings required it was necessary that each be kept a separate entity while contributing its part to the whole.

Smith's policy is to avoid dormitory units so large that the individual student is practically lost among a vast number. Each of the 15 dormitories, built or projected, is intended for the accommodation of 60 students, each building to have its own dining room and to be in effect a separate house. On the first floor of each building are two small apartments, each consisting of a study, bedroom and bath, one for the use of the head of the house and the other for a resident member of the faculty. Investigation was made of the possibility of having one kitchen for the group, but the idea was abandoned. Serving these three buildings there are two kitchens, one for Cushing House, and another kitchen for the 120 students occupying Jordan House and Ellen Emerson House, the larger kitchen being placed, it should be noted, between the serving rooms of the two buildings. Use of this kitchen is something of an experiment, and it is as yet too early to judge of its practicability and of the use of anything other than individual kitchens in planning future dormitories.

The interiors of these grouped dormitories, particularly their living and dining rooms, possess a character quite different from that of the older buildings scattered about the Smith campus. Fireplaces are designed in the old fashioned way to draw well and to throw out heat; their facings and hearths are of soapstone, and the mantels are simple and unpretentious, in keeping with the structures themselves. Woodwork as well as walls is generally painted in light colors so that the effect is cheerful and domestic, with no overpowering display of monumental hardwood trim. Floors of dining rooms and corridors are covered with battleship linoleum, and the floors of living rooms are of plain oak, while the bedrooms have floors of hard pine, stained and waxed. In one building the walls of bedrooms are painted, and plain paper covers the walls of the other two, while in the interests of economical upkeep bedroom doors are of natural wood stained walnut. Each of these dormitories was decorated and furnished by a graduate of Smith College—Jordan House by Blanche Morse of Boston, Ellen Emerson House by

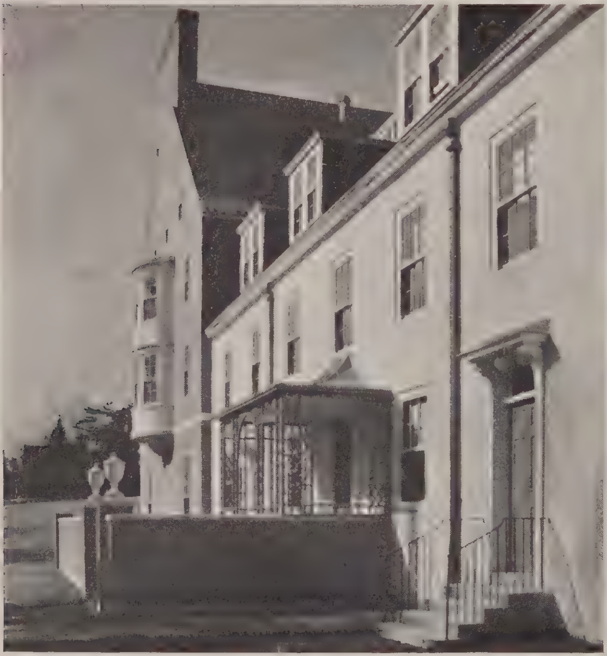
View of Quadrangle from Loggia of Cushing House
Dormitory Group, Smith College



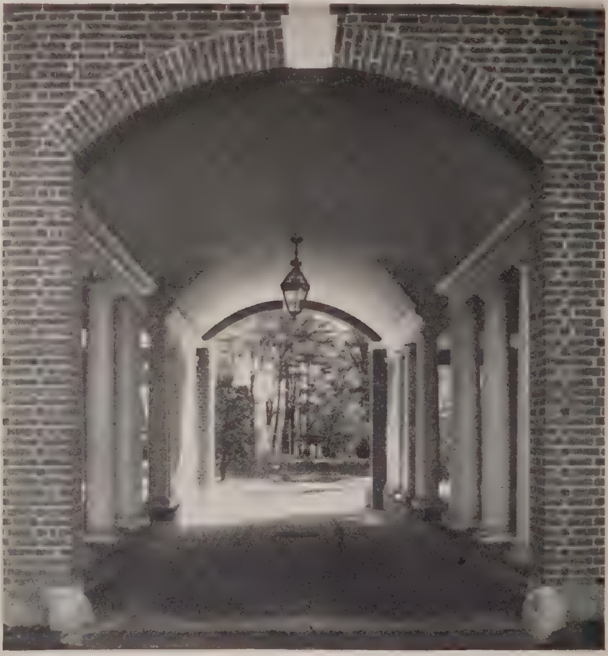
View from the South Looking along Paradise Road
Note steep grades of property to be developed southwest of present group

Louise P. D. Lee of New York and Cushing House by Julia MacAlister of Philadelphia, interior decorators.

The policy of the college further requires that each student have an individual room and that the rooms be of about the same size. No private baths are provided in these dormitories, but showers as well as tubs have been installed as an experiment, the idea being that use of showers may save time. Near each of the bathrooms or lavatories lockers have been provided, one for each student, for keeping towels, etc., a decided improvement over the arrangement prevailing in the older dormitories where damp towels are necessarily hung in the unventilated closets of the bedrooms. In addition to piazzas or loggias for each building there is at each end of Ellen Emerson House a sleeping porch where 10 or 12 girls can sleep, each of the porches so arranged that it can be entered from two dormitories.



Enclosed Service Yard of Ellen Emerson House

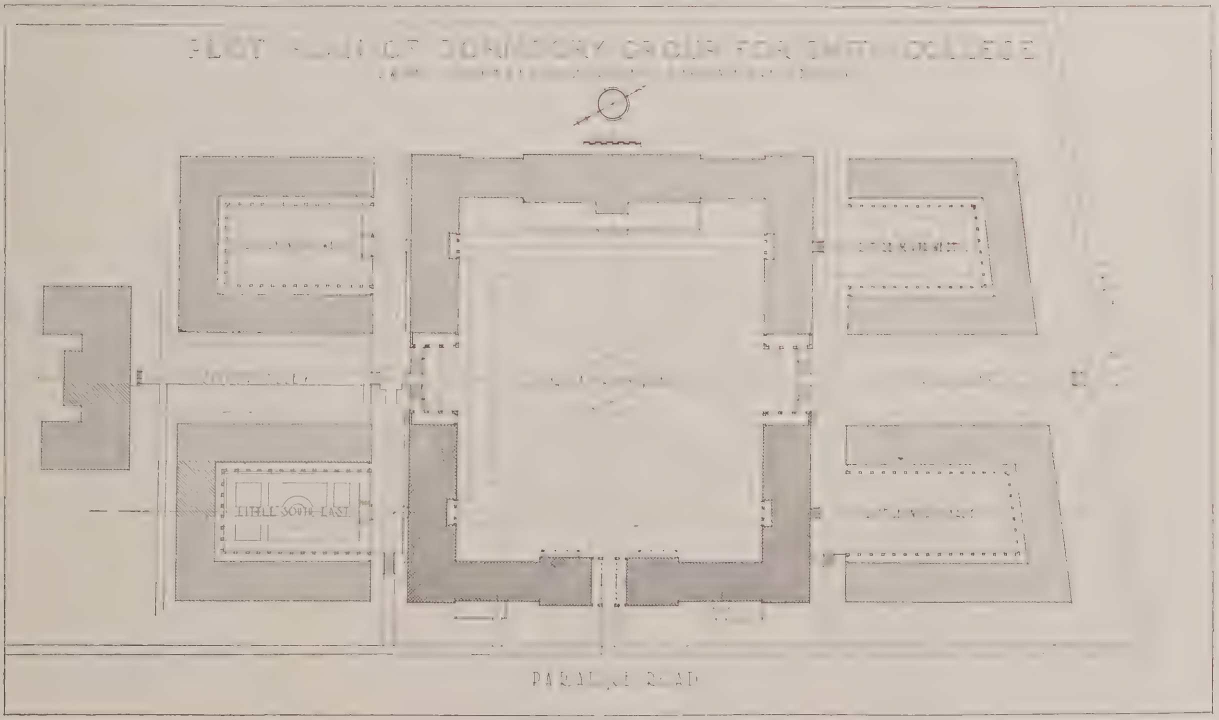


Passage to Quadrangle through Ellen Emerson House

If it is found that the use of sleeping porches does not endure, these spaces can easily be made into bedrooms.

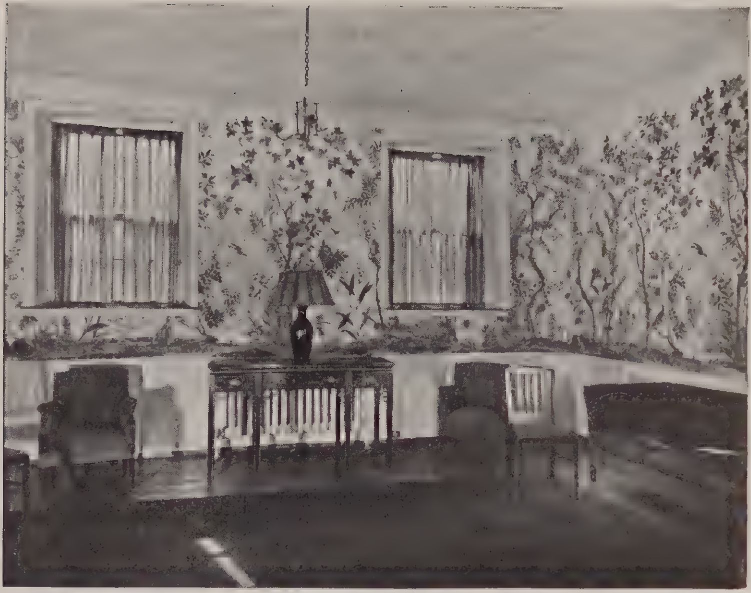
Smith's traditions to some extent led to the adoption of a rather free and extremely simple type of New England colonial architecture, the buildings of the group being somewhat reminiscent of Massachusetts Hall at Harvard. With a large number of bedrooms necessarily of uniform size, window openings must be equally spaced, and the balance of architectural effect thus secured agrees well with the form of architecture selected. The windows throughout are placed within 1½ inches of the face of the brickwork, and there is a full casing of wood between the sash and the brick. The detail is the same as in the windows of Hollis and Stoughton Halls at Harvard and the old state house in Boston. Since there is considerably more white paint about the windows than is usual in modern buildings, giving a cheerful appearance, the architects felt that blinds at the windows would be unnecessary. It is both difficult and expensive to hang blinds on windows with wide casings so that they will not conceal the woodwork when they are open; specially made hinges must be used, and this adds materially to the expense. Many people think they cannot sleep unless the window blinds are tightly closed, but most physicians agree that the free admission of air into a bedroom at night promotes sound sleeping, and it is not difficult to become accustomed to sleeping

Perspective of Building Closing Quadrangle



Complete Plot Plan of Dormitory Group at Smith College, Northampton, Mass.
The double hatched U portion indicates part now built

J. W. Ames, K. S. Putnam and E. S. Dodge, Architects

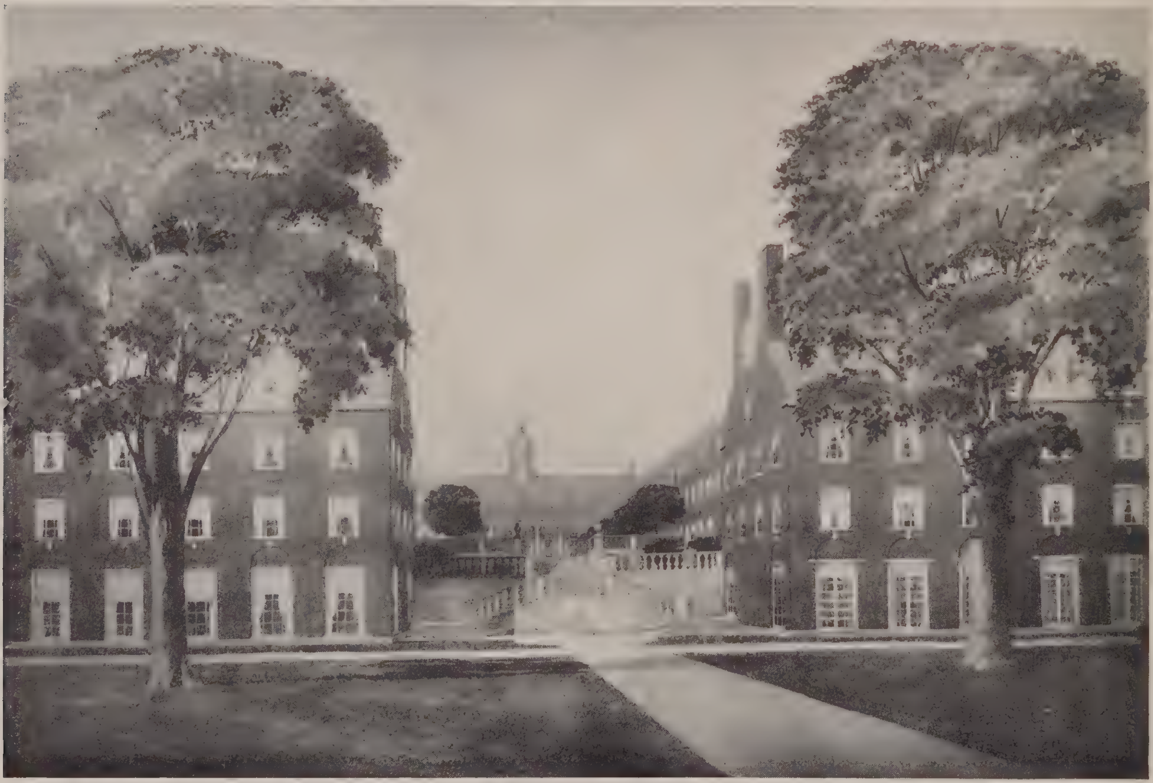


A Typical Parlor in the Dormitories Showing Simple Scheme of Decoration

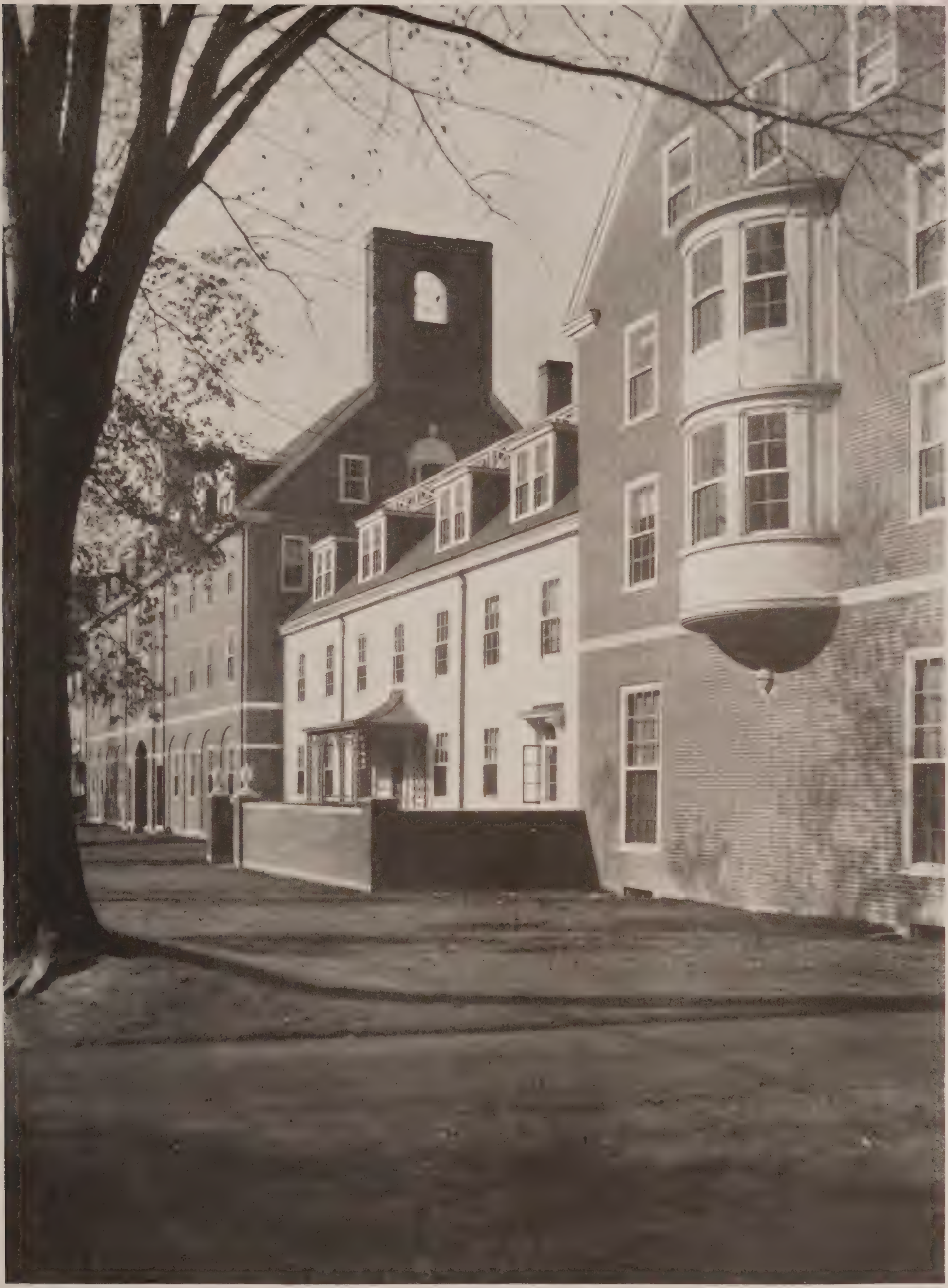
in a fairly light room. Although these are the only Smith College dormitories without blinds, no complaint has yet been made.

The foundations of the buildings are of concrete. The grass courses and outside steps are of granite; the string courses between the first and second floors of marble; the floors of the loggias, piazzas and passageway through Ellen Emerson House of blue stone; the walls above the first floors are of terra cotta blocks, veneered with local sand-struck brick laid in modified English bond; windows are built without stone sills or brick arches over them, the wooden window sills being heavy and projecting beyond the brick line. The cornices are of wood and gutters and conductors of copper. The roof space forms one of the bedroom floors, and for this reason large double dormers were used in many cases, because they make light and attractive rooms, really better than the rooms below the cornice, so that in spite of the extra flight of stairs, they can be rented for the same prices. In the two wings connecting the central building with the flanking dormitories the brick veneer was omitted and the terra cotta blocks were covered with stucco. It was thought that this might break the monotony of the brickwork on the long facades, especially when future dormitories are built.

Smith College has no central heating plant, and instead of planning one such plant for the entire group of 15 new dormitories it was thought best to subdivide the units. The contract was let July, 1921, and the cost was about 43 cents per cubic foot.



Perspective Sketch on Main Axis of Quadrangle Looking into South Alley
Dormitory group at Smith College, Northampton, Mass.

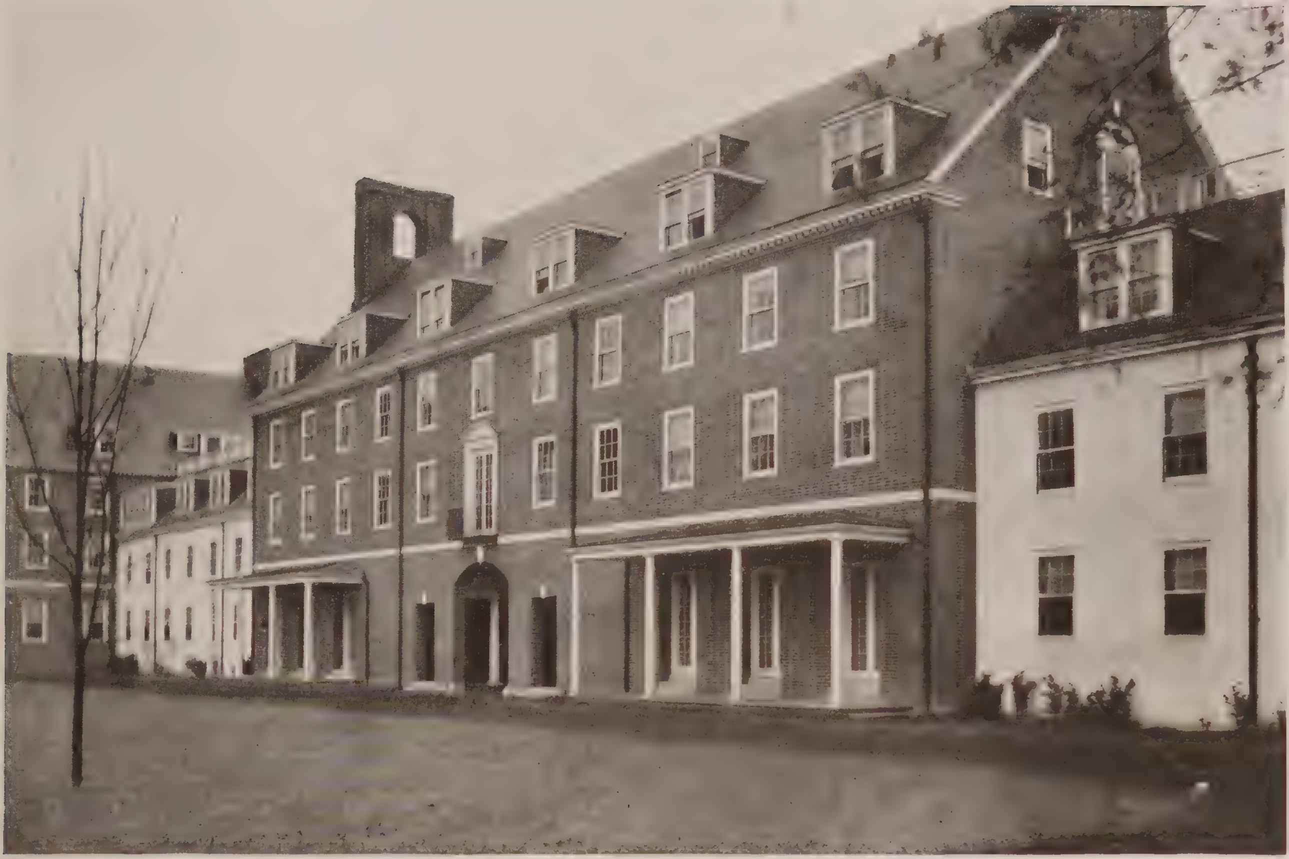


DETAIL VIEW OF STREET FACADE

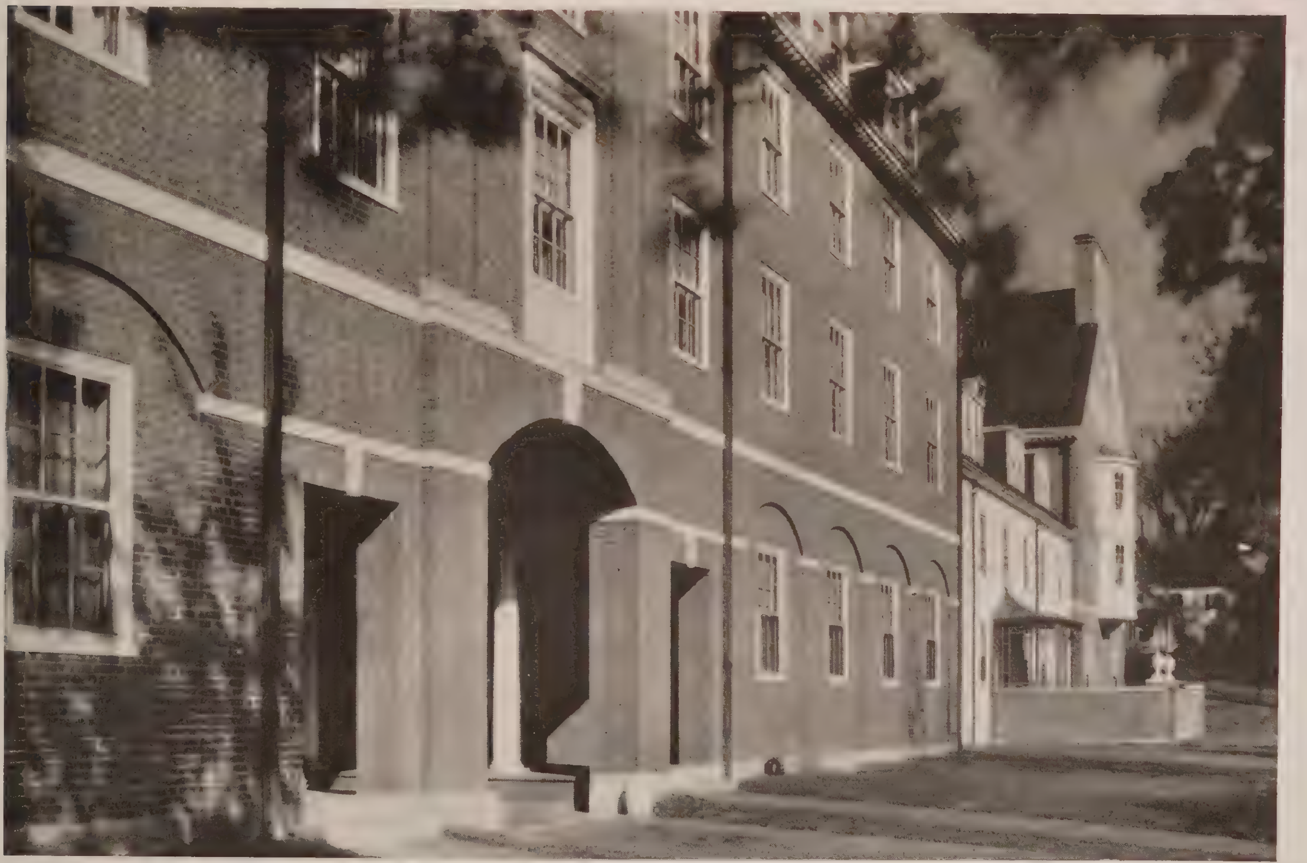
DORMITORY GROUP, SMITH COLLEGE, NORTHAMPTON, MASS.

J. W. AMES, K. S. PUTNAM AND E. S. DODGE, ARCHITECTS

Photos by Paul J. Weber



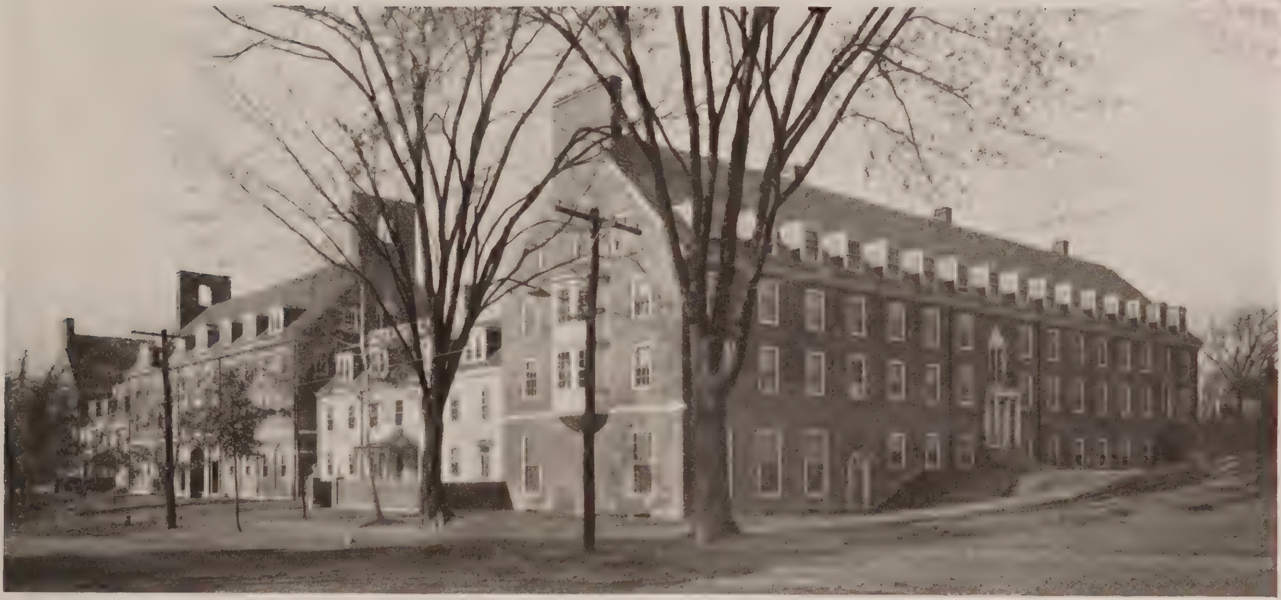
QUADRANGLE FRONT OF MAIN BUILDING



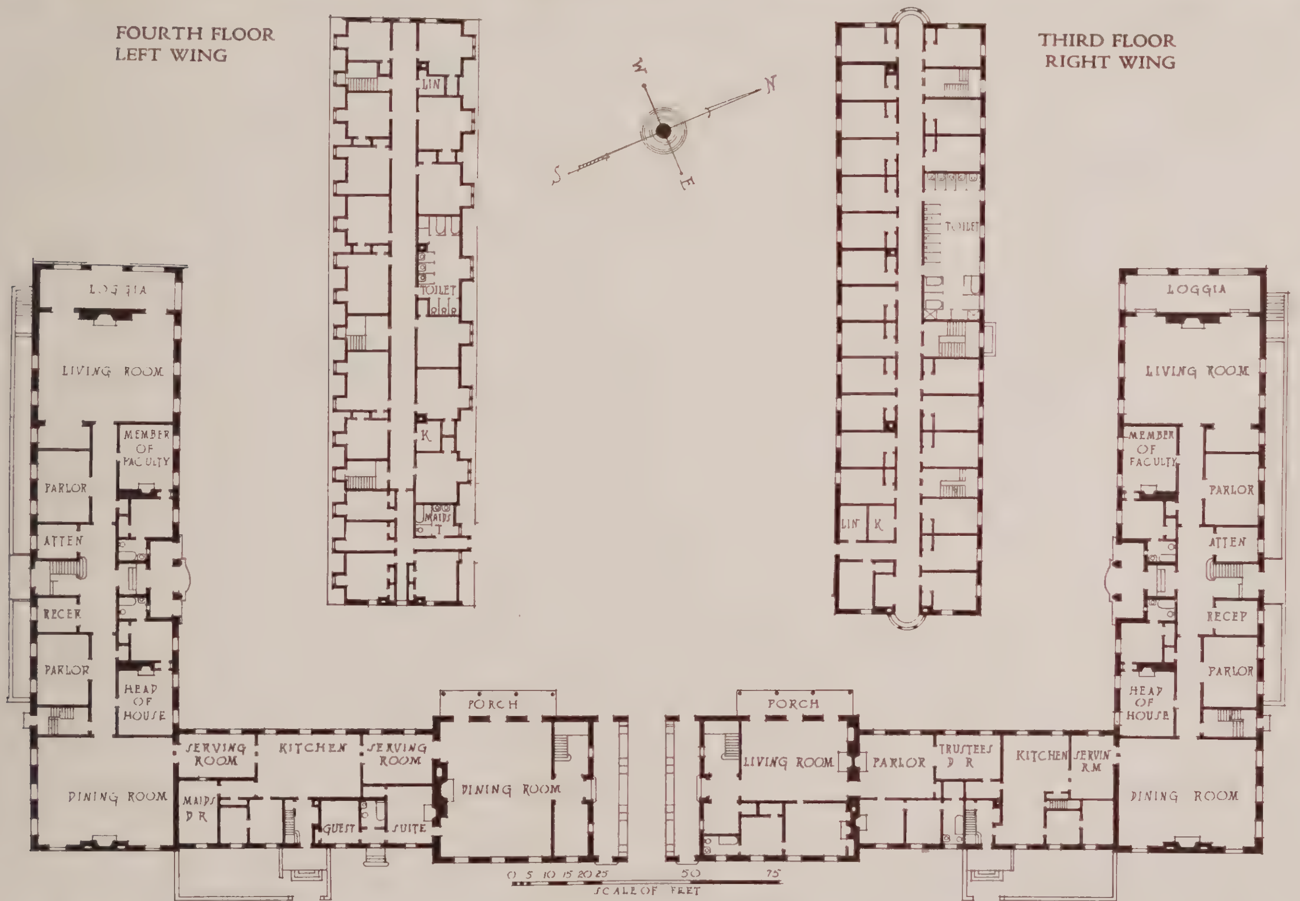
DETAIL OF PRINCIPAL ENTRANCE

DORMITORY GROUP, SMITH COLLEGE, NORTHAMPTON, MASS.

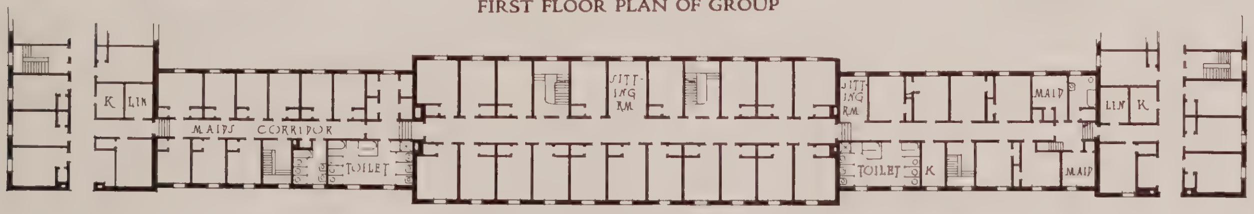
J. W. AMES, K. S. PUTNAM AND E. S. DODGE, ARCHITECTS



GENERAL VIEW FROM STREET



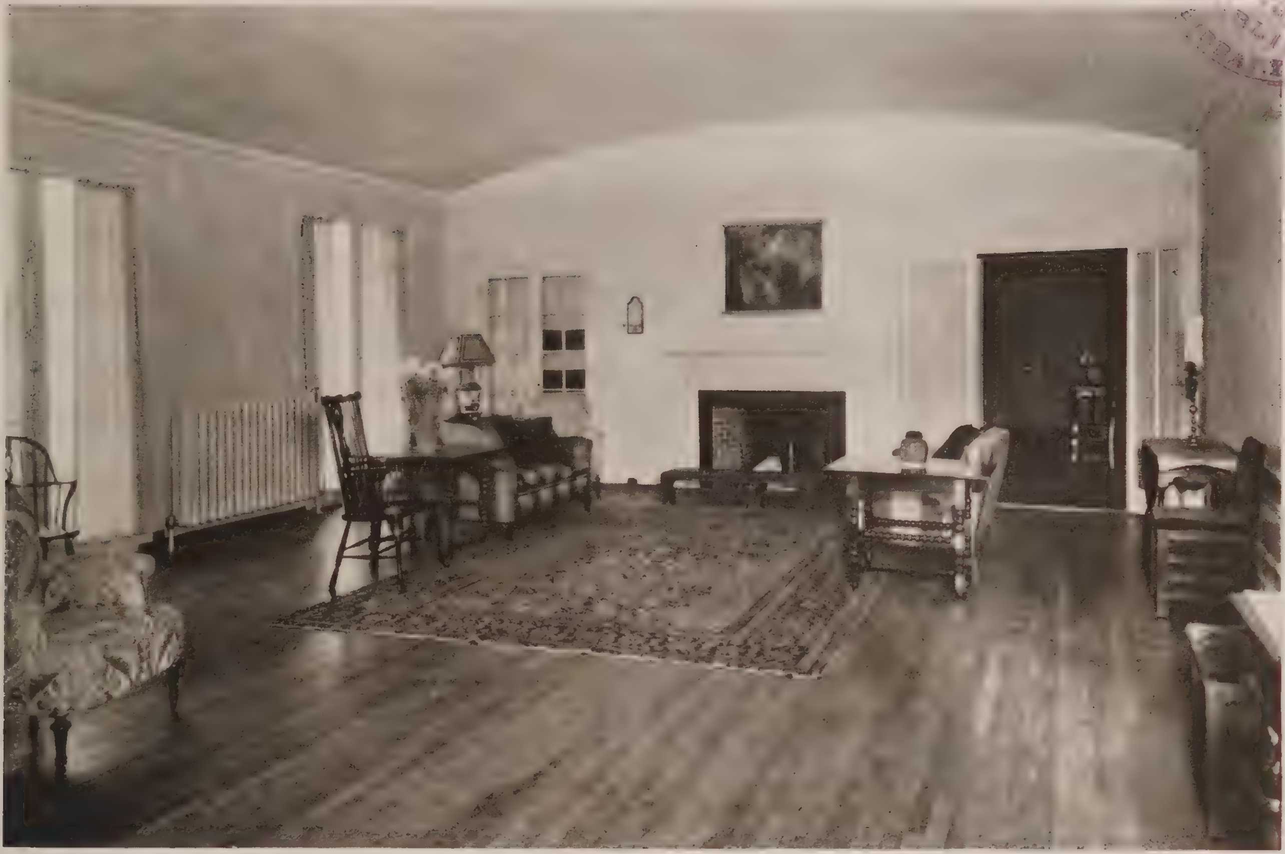
FIRST FLOOR PLAN OF GROUP



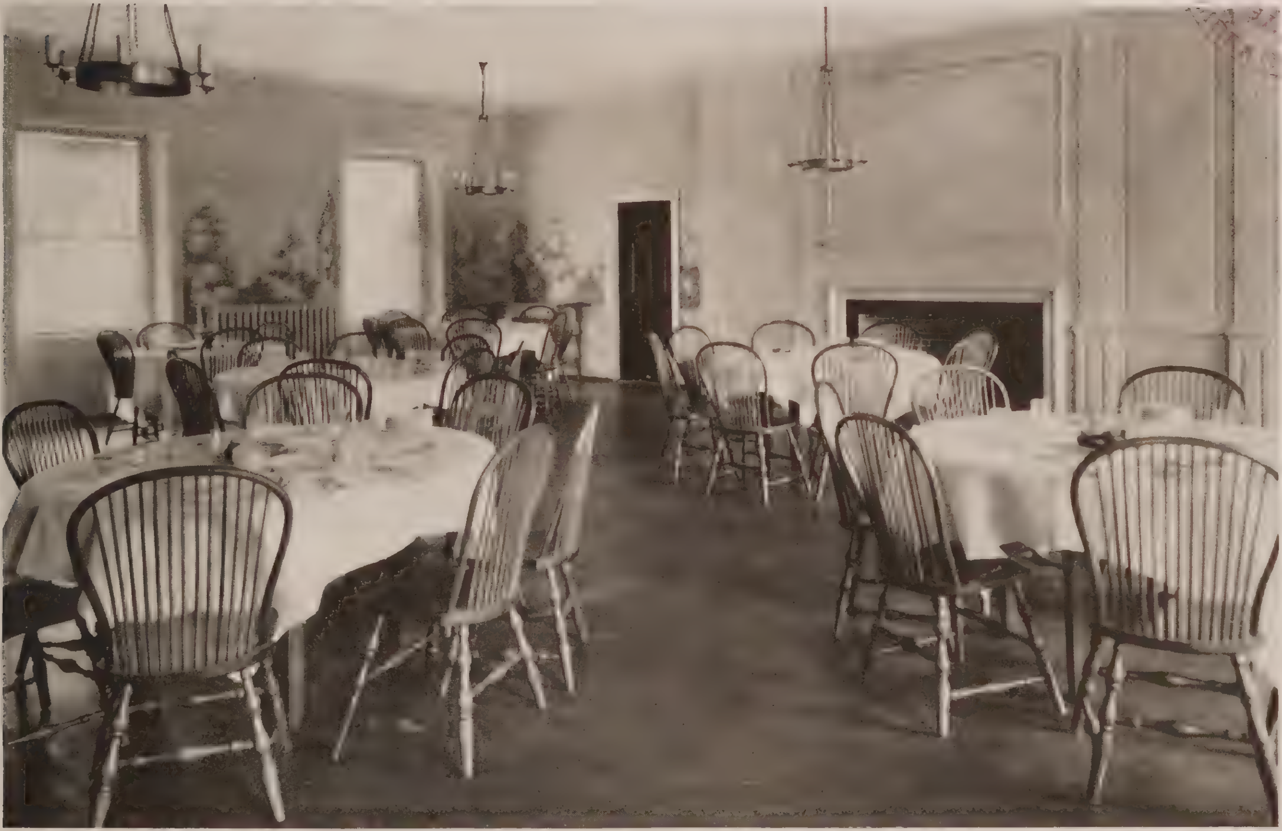
SECOND FLOOR PLAN OF FRONT PORTION

DORMITORY GROUP, SMITH COLLEGE, NORTHAMPTON, MASS.

J. W. AMES, K. S. PUTNAM AND E. S. DODGE, ARCHITECTS



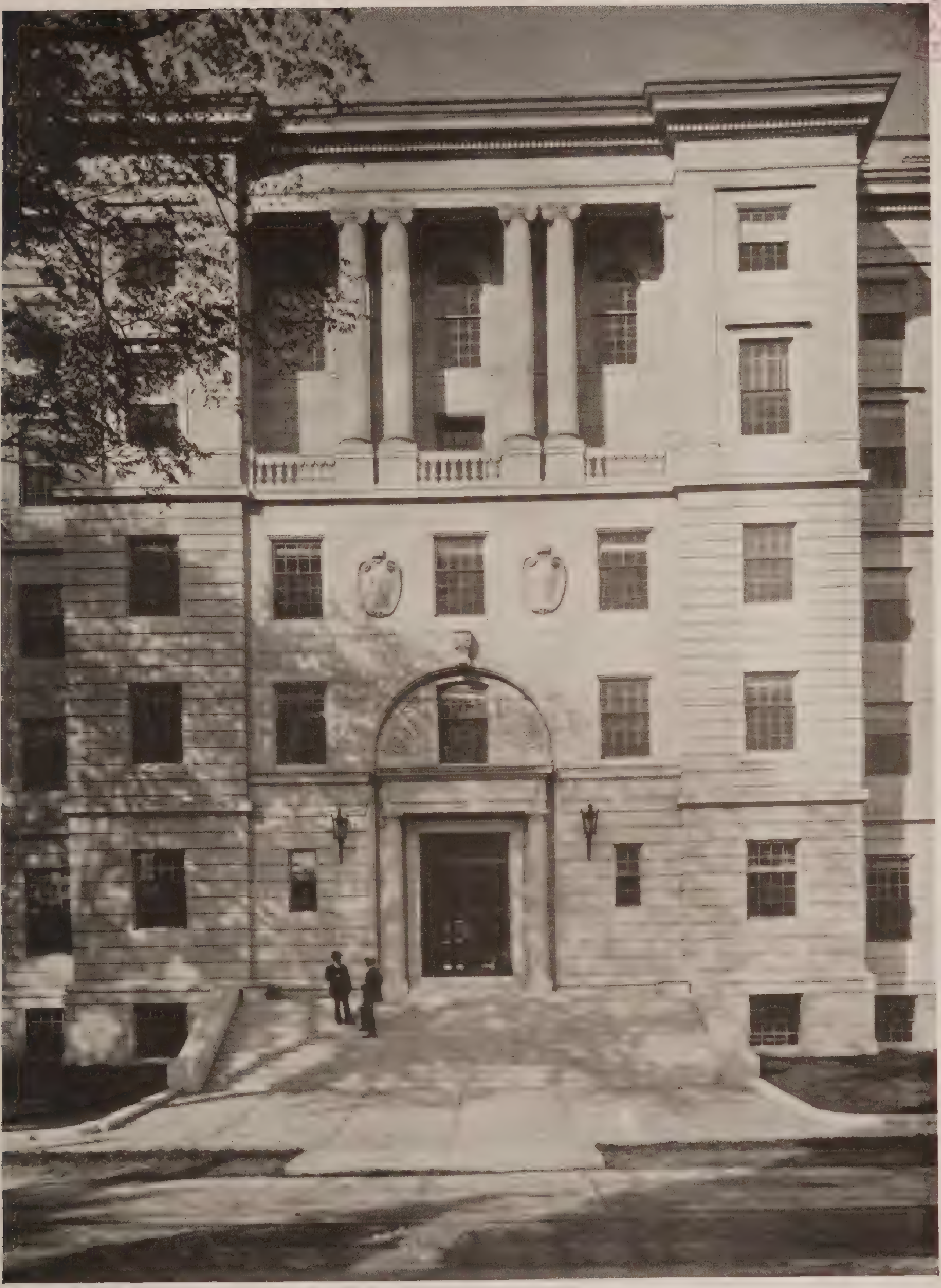
LIVING ROOM OF ELLEN EMERSON HOUSE



DINING ROOM OF ELLEN EMERSON HOUSE

DORMITORY GROUP, SMITH COLLEGE, NORTHAMPTON, MASS.

J. W. AMES, K. S. PUTNAM AND E. S. DODGE, ARCHITECTS

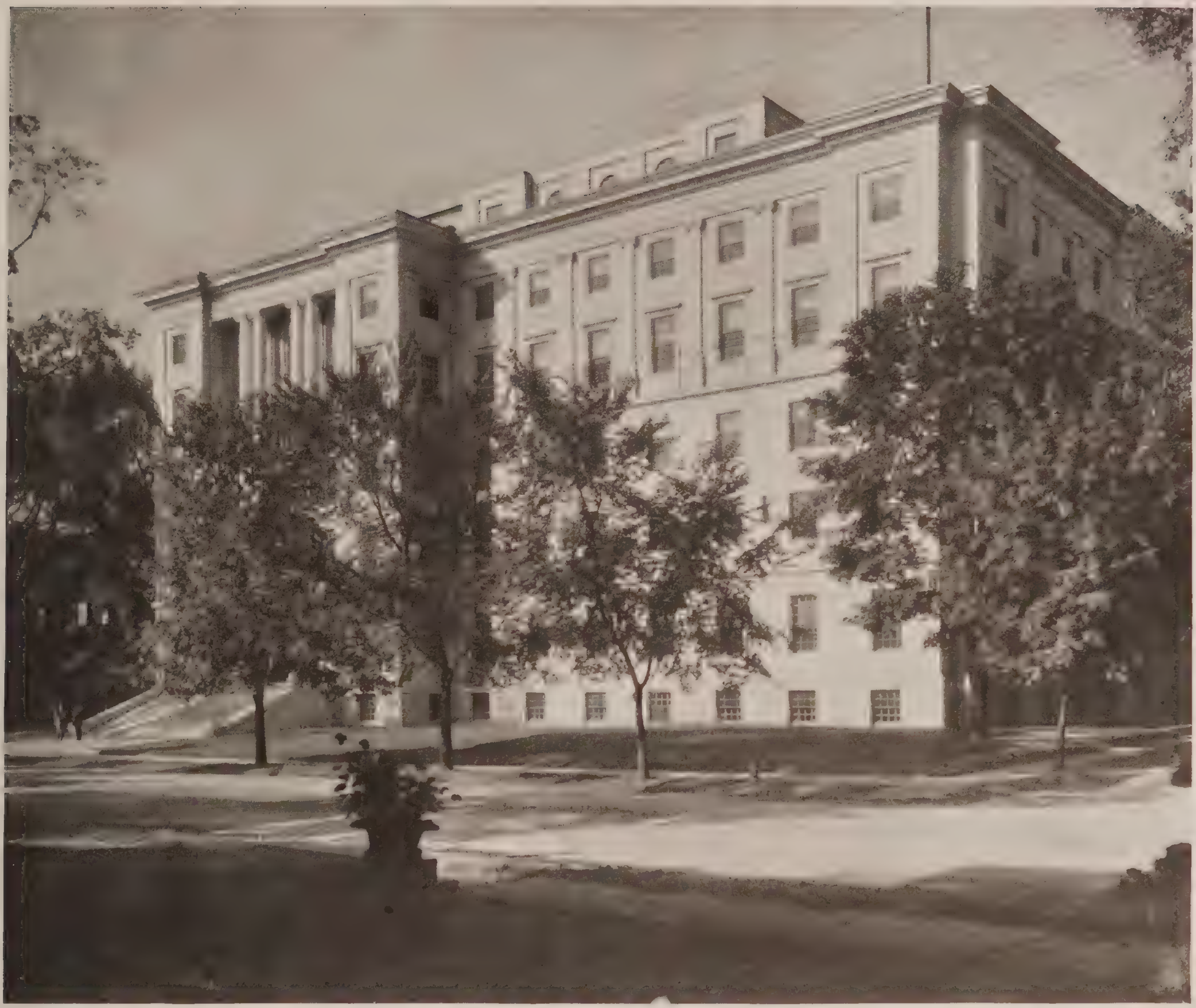


DETAIL OF ENTRANCE PAVILION

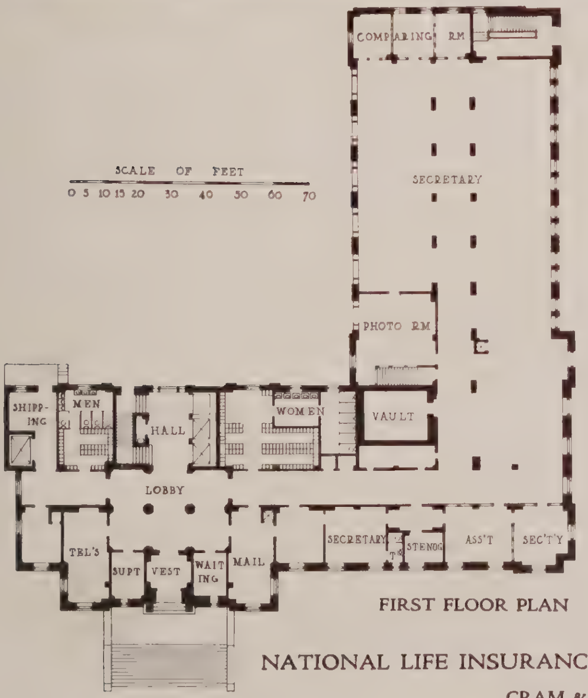
NATIONAL LIFE INSURANCE COMPANY BUILDING, MONTPELIER, VT

CRAM & FERGUSON, ARCHITECTS

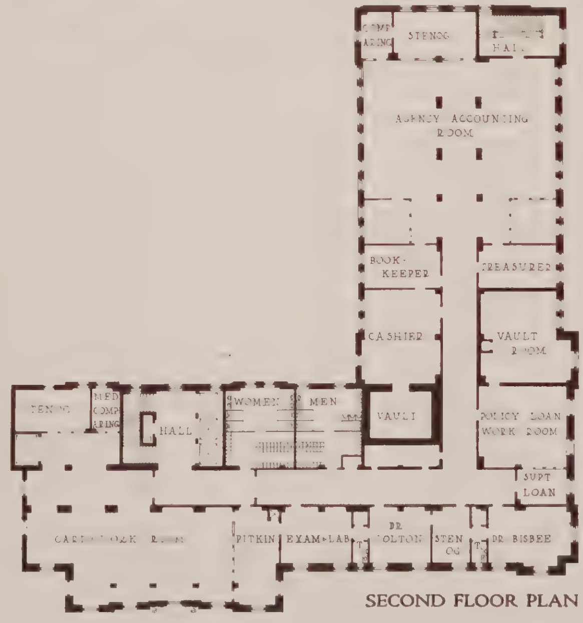
Photos by Paul J. Weber



GENERAL VIEW OF EXTERIOR



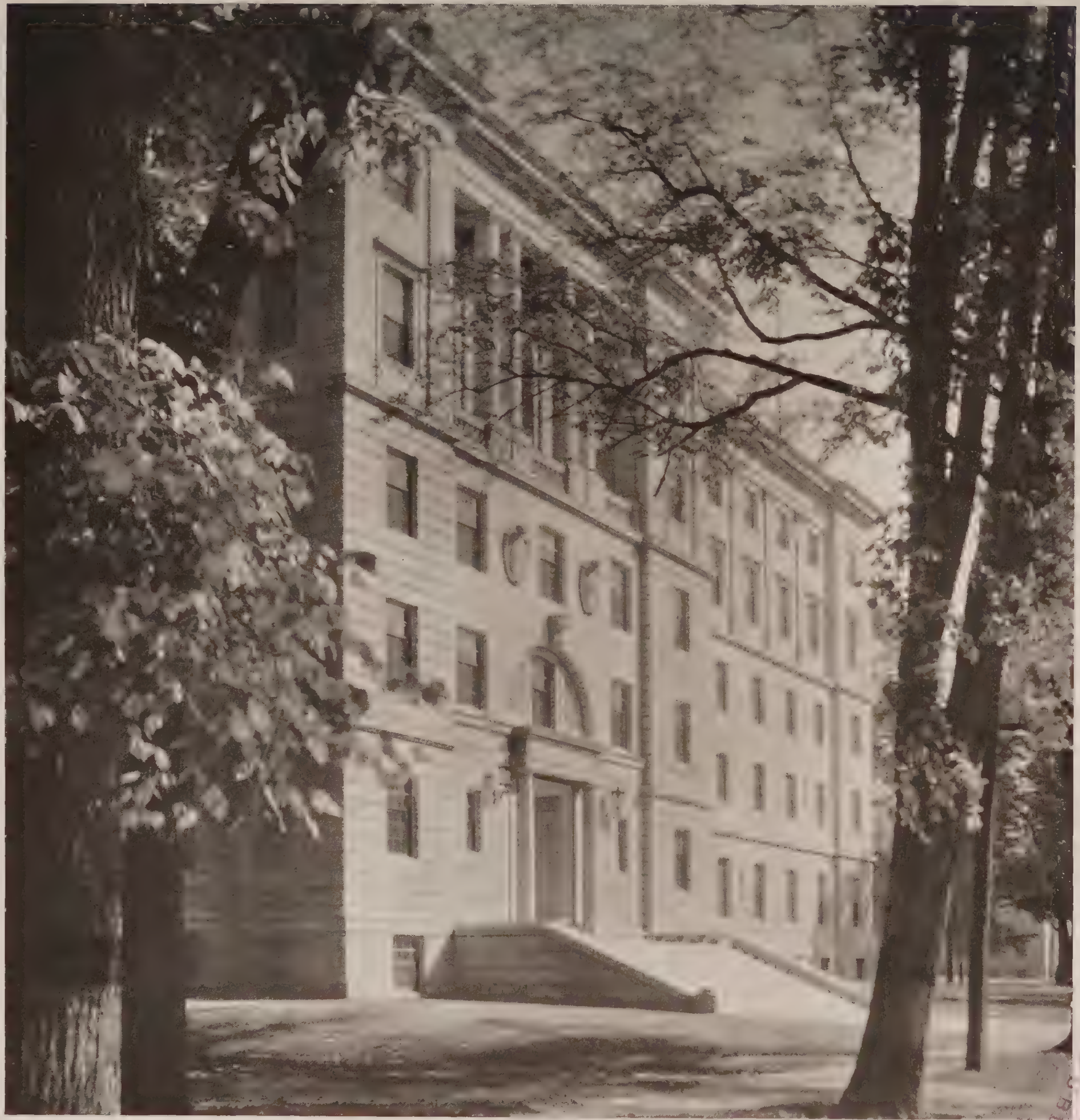
FIRST FLOOR PLAN



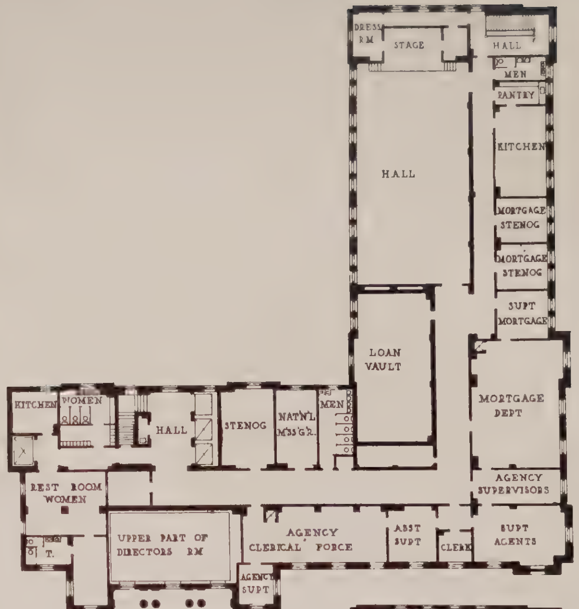
SECOND FLOOR PLAN

NATIONAL LIFE INSURANCE COMPANY BUILDING, MONTPELIER, VT.

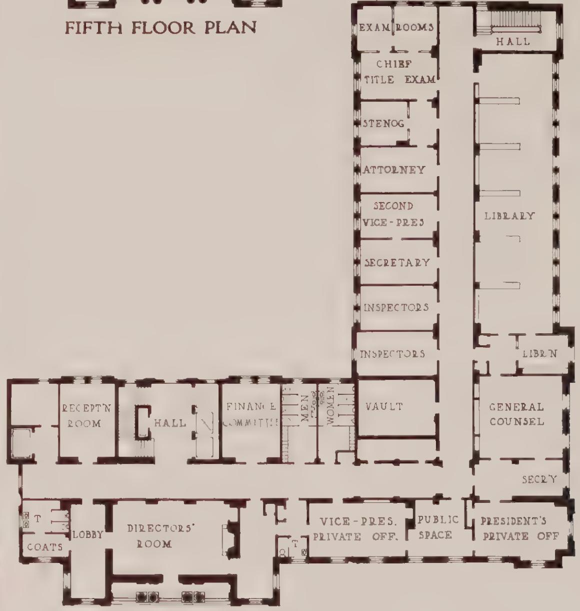
CRAM & FERGUSON, ARCHITECTS



MAIN FACADE



FIFTH FLOOR PLAN

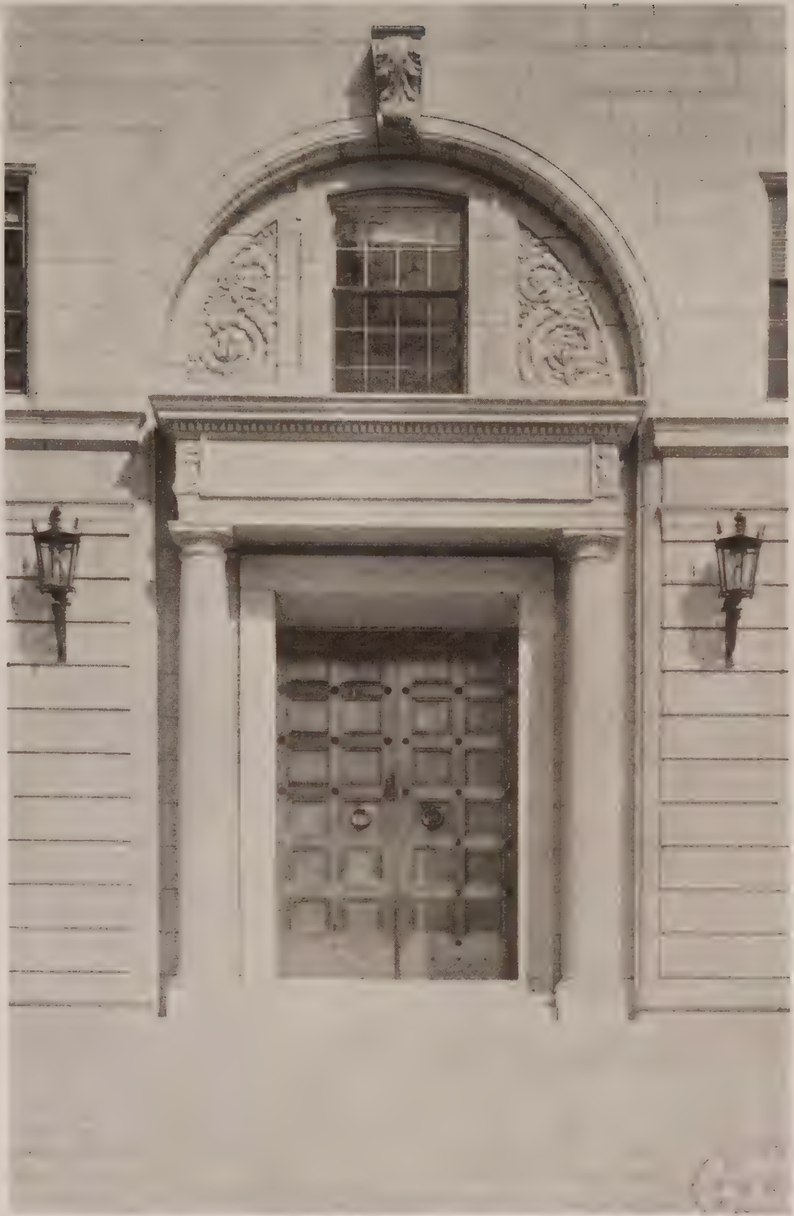


FOURTH FLOOR PLAN

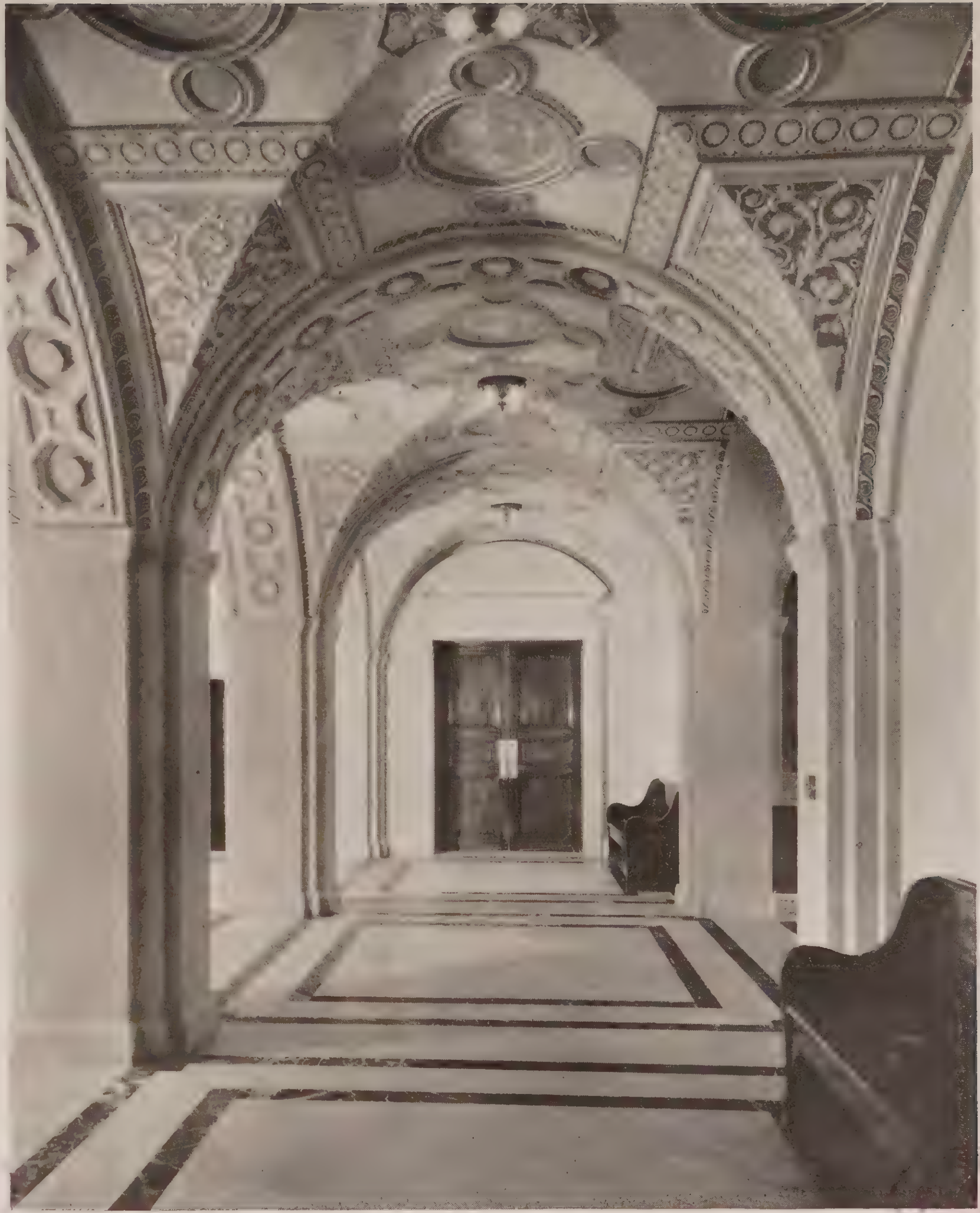
BOSTON PUBLIC

NATIONAL LIFE INSURANCE COMPANY BUILDING, MONTPELIER, VT.

CRAM & FERGUSON, ARCHITECTS



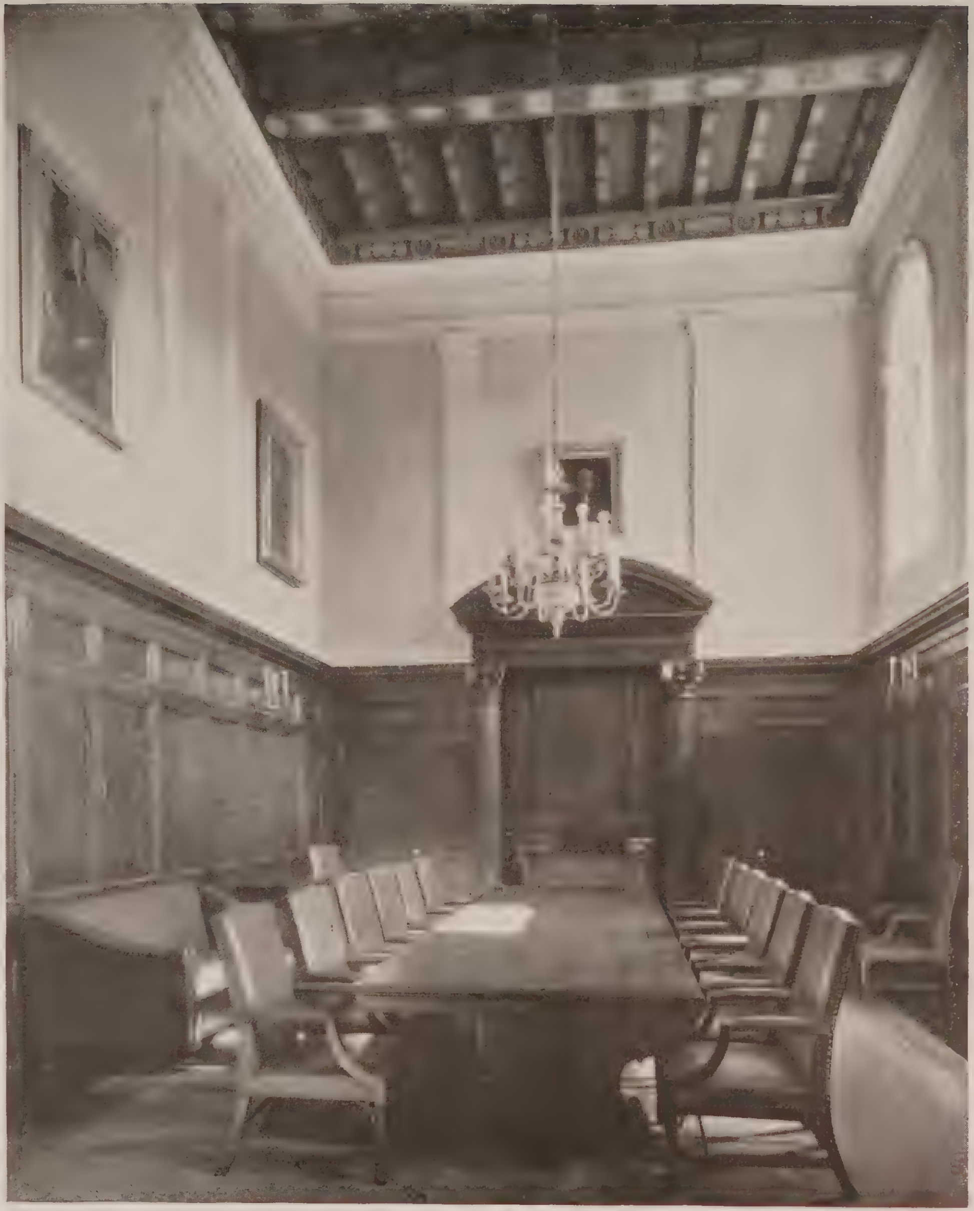
DETAIL OF MAIN ENTRANCE



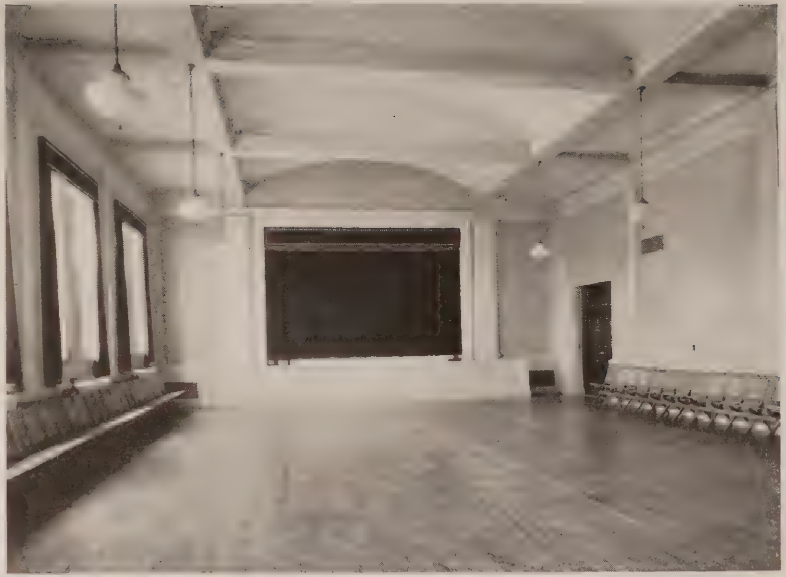
DETAIL OF MAIN LOBBY

NATIONAL LIFE INSURANCE COMPANY BUILDING, MONTPELIER, VT.

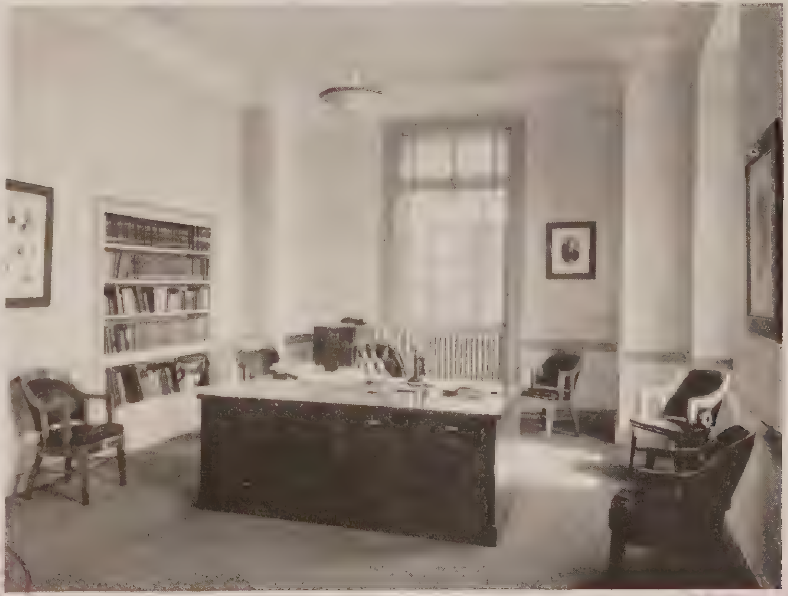
CRAM & FERGUSON, ARCHITECTS



DIRECTORS' ROOM



ASSEMBLY HALL



PRIVATE OFFICE

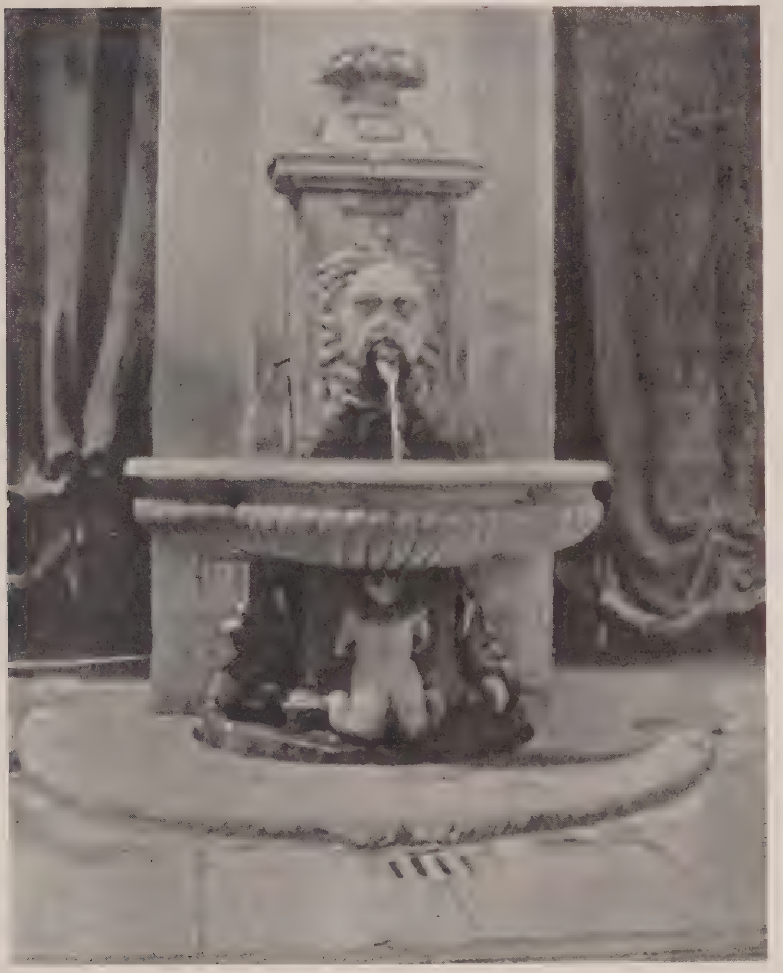
NATIONAL LIFE INSURANCE COMPANY BUILDING, MONTPELIER, VT.

CRAM & FERGUSON, ARCHITECTS

ITALIAN RENAISSANCE DETAILS

A SERIES OF MEASURED DRAWINGS

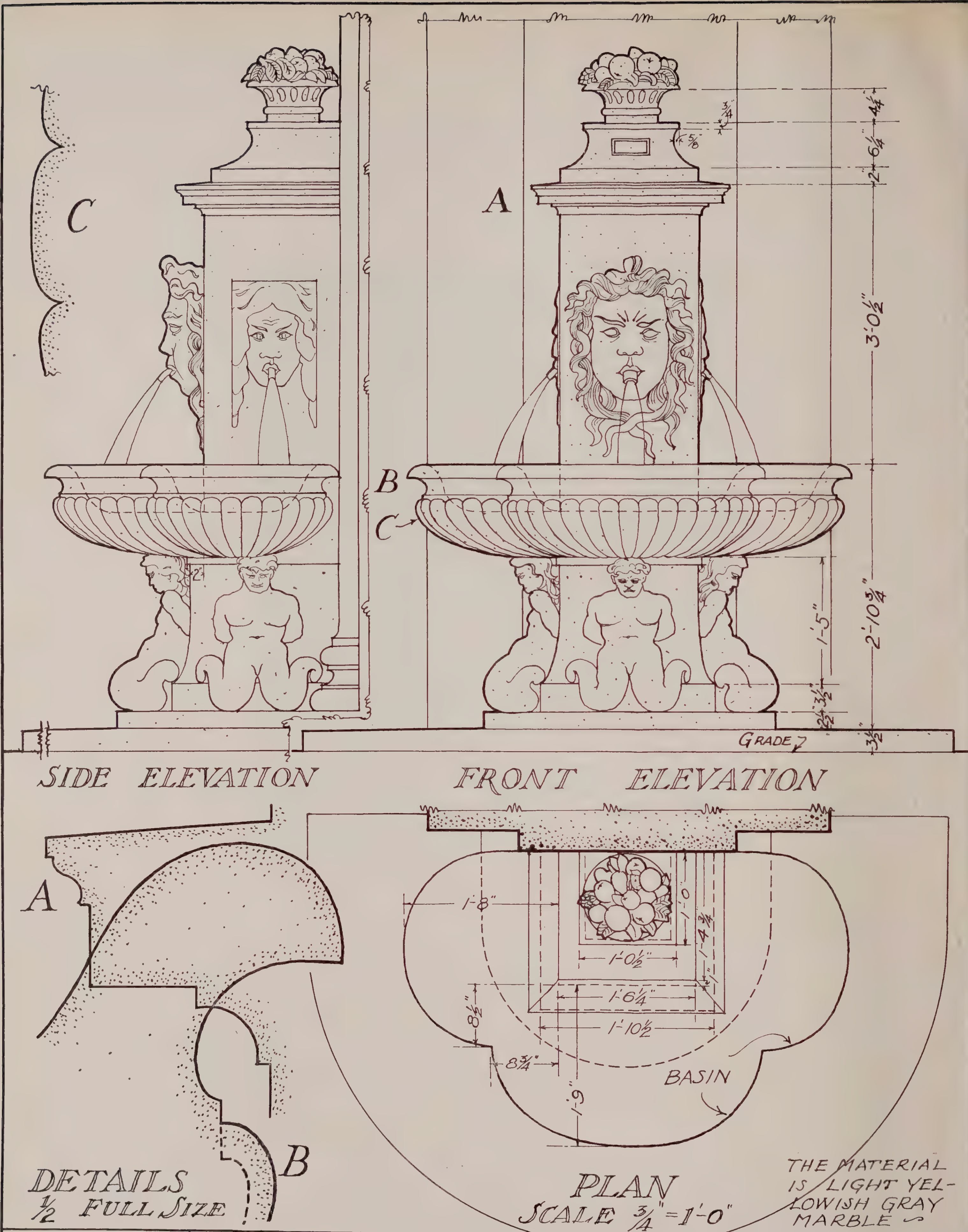
By F. NELSON BREED



MARBLE DRINKING FOUNTAIN
PIAZZA DEL COMMUNE, BRESCIA

THE little drinking fountain illustrated here is one of two which are placed symmetrically against the piers of the colonnade at the end of the Piazza del Commune at Brescia. These fountains are cut from a putty colored marble which is unpolished, unless one regards as a kind of polish the patina which has gathered around the edges of the basin against which countless people have leaned to quench their thirst.

Like many of the ornamental accessories in the squares, "piazzas," and other open spaces of Italian cities, this fountain is of a size and character which would render it an excellent model for garden use. While it possesses considerable dignity it is not sufficiently monumental or large in scale to be overwhelming in a garden of even average size where the design and surroundings are of an Italian character. Such a fountain would be particularly successful placed against a wall sufficiently long and high to give the necessary background.

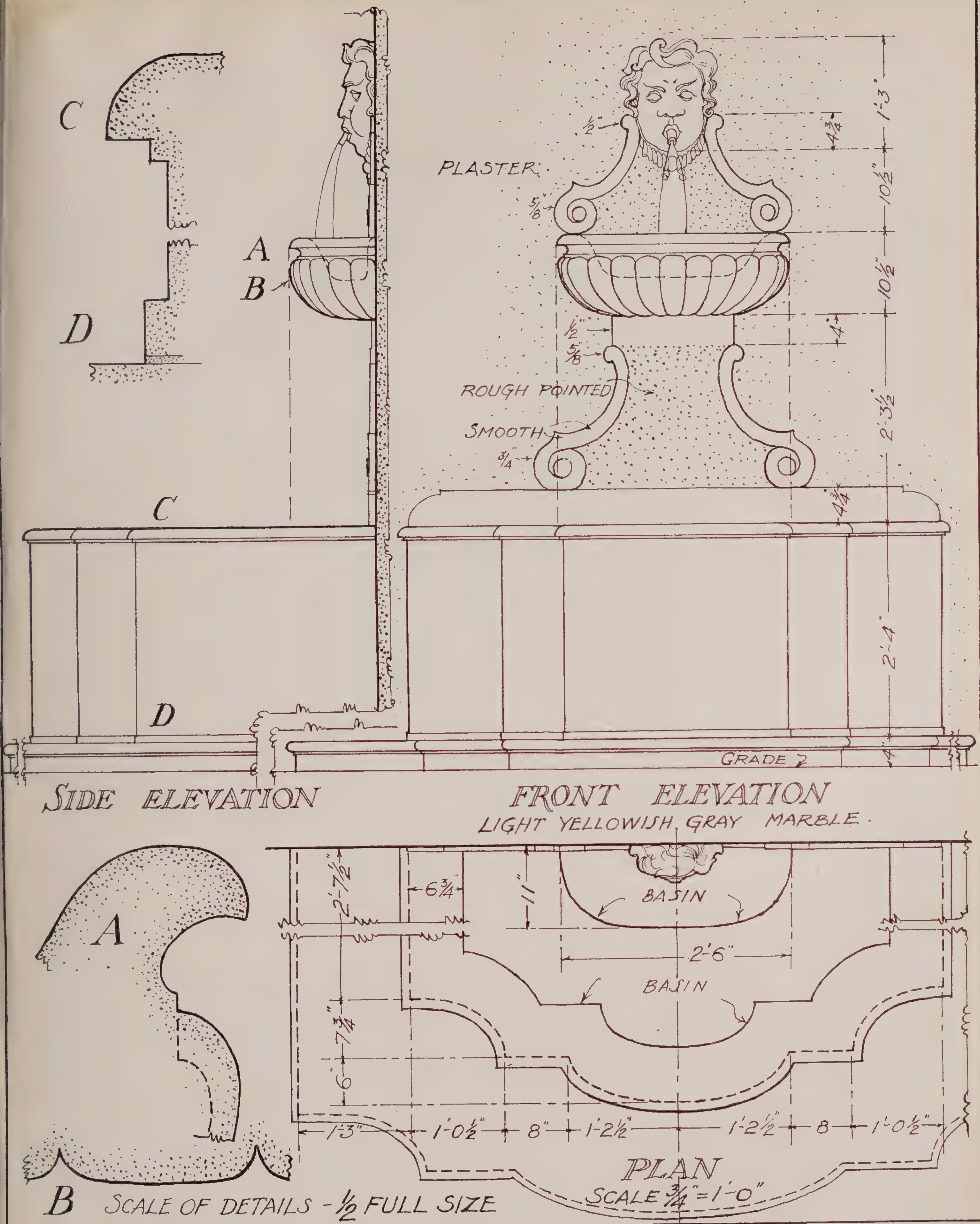


THE MATERIAL IS LIGHT YELLOWISH GRAY MARBLE

ITALIAN
DETAILS
1923

WALL FOUNTAIN
AT
BRESCIA, ITALY

MEASURED AND
DRAWN BY
F. N. BREED.

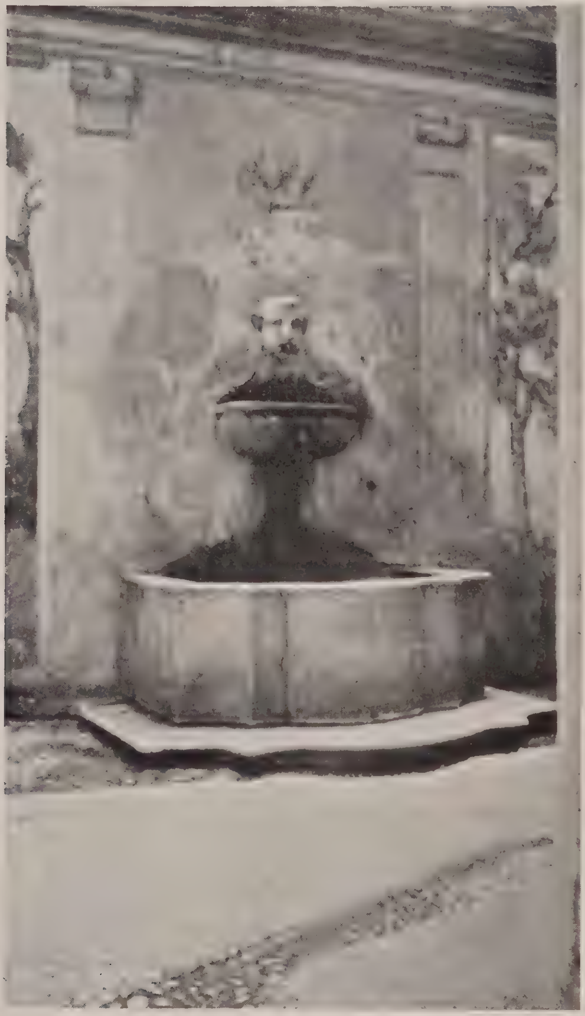


ITALIAN
DETAILS
1923

WALL FOUNTAIN AT BRESCIA, ITALY.

MEASURED AND
DRAWN BY
F. N. BREED.

ITALIAN RENAISSANCE DETAILS



MARBLE WALL FOUNTAIN
GARDEN IN BRESCIA

ONE finds in Brescia a great number of fountains of different kinds, placed wherever an appropriate space exists—in public areas of every sort, and particularly in the shaded courtyard or garden or in the cortile, which is part of many an Italian house.

This wall fountain of a somewhat naive design stands within a small enclosed garden. The pilasters and other decoration of the wall behind it are painted, but the fountain itself is of the putty colored marble so extensively used in Brescia, and the surfaces of parts of the marble have been roughened to give contrast to the parts not so treated. The fountain, which affords an illustration of what may be done with simple materials when used with taste, offers interesting opportunities for use as a model, for owing to its simplicity of form it could be readily developed in cement or some similar material. It would be difficult to discover a wall fountain which would be more appropriate for use in a modern garden.

BUSINESS & FINANCE

C. Stanley Taylor, *Editor*

Business Factors in Architectural Practice

II. ARCHITECTURAL FEES AS DEFERRED PROFITS

THE first article of this series appeared in the February, 1923 issue of THE FORUM under the heading "Mortgage Financing for Moderate Cost Dwellings." Before entering upon a discussion of the financing of larger buildings of various types, it is important to consider the architect's position in relation to the business development of such projects. There are many times when the co-operation of the architect is of great importance during the final stages of financing, and he may be in a position through deferred payment for professional services to contribute a share in the equity to make certain the immediate beginning of construction.—*Editor.*

THE subject of the actual participation by architects in the ownership or financing of proposed buildings is by no means new. For years architects have at times found it expedient to enter into direct business relations with the developers of building projects or to accept service payments in the form of deferred profits in order to facilitate equity financing. At no time in the history of the construction industry, however, has this practice been so general or so profitable to architects as at the present time. For this reason it is felt that before giving detailed consideration to the methods of mortgage and equity financing for various classes of buildings, it will be wise to analyze this subject of participation by the architect in the business phases of speculative and investment building projects in which his clients may be interested.

We may preface this discussion by a brief analysis of the fundamentals of the average speculative or investment building venture. The elements of cost usually involved include the cost of land; cost of the building (including contractor's profit); the architect's fee; cost of financing, and general costs which may involve real estate brokerage, insurance and similar items. The problem of the client is to secure the necessary financing to cover this total. The ordinary methods of providing this requisite total include borrowing on first and second mortgages, leaving a cash equity which the client must provide. In many instances, however, particularly on large commercial building ventures, this cash equity is not readily forthcoming, and unless a more adequate method of financing be entered upon, it would be necessary to abandon the project which to the architect would mean a loss of large prospective commissions.

It is generally assumed that any investment or speculative building will bring returns in the form of rentals and profits which will be sufficient to amortize a large proportion of the equity cost within a few years. The building as a business venture represents in effect collateral not only for the first mortgage but for various credits which may be extended as assistance in the complete financing of the project. The usual financial analysis of a new building project includes negotiations for deferred payment on several items, such as land, contractor's profit, architect's fee, and sometimes a portion of sub-contractor and material payments. It is often the case that the owner of the land will be found willing to take practically all the cost of land in the form of a second mortgage on the finished project. The land is therefore purchased with a small cash payment under a contract which allows the placing of building and permanent first mortgage loans, with the purchase price of land subordinated as a second mortgage. When this is done the owner of the land is usually allowed a more liberal price for his property than if it were an outright cash purchase. Another method for obtaining the land on a deferred payment basis is to form a preliminary syndicate which purchases the land for cash and turns it into the holding company at a substantial profit under a second mortgage arrangement.

In negotiating with the general contractor who is able to finance his work and take deferred payments, there are several methods through which the transaction may be consummated. In some instances the contractor is paid by a series of long-term notes. Again, he is given bonds of the owning company or a direct interest in the ownership of the building. Occasionally a third mortgage is created in which the interests of various deferred creditors are included. Where the general contractor is in a position to assist in the original investment by taking deferred payments he is usually allowed considerable latitude in the contract price of the building and often is given the work on a cost-plus-fixed-fee contract, eliminating competitive bidders.

The next negotiation is usually with the architect, and he may be asked to take his full commission or part of his commission in the form of deferred payments. The architect who is in a position to do this is fortunate in that he receives a substantial commission (often 10 per cent on the cost of the building) and at the same time he contributes importantly to the business development of the project, in this manner bringing work into his office which might ordinarily go to another architect so situated as to be in a position to co-operate in this way.

During the past few years a large proportion of the better class speculative and investment buildings in our larger cities have been made possible through a more or less elaborate system of financing along the lines indicated here. In fact, there are many instances on record in which the original promotion has been started through co-operation between an architect and an owner, real estate broker or the owner of land logically situated for development.

Many architects have realized the advisability of fairly close association with mortgage loaning interests. Through this knowledge of the sources of mortgage financing for local building operations the architect is often in a position to aid materially during the promotional stages of the project. This assistance is rendered not only through the preparation of plans and specifications as required but because of established confidence on the part of the mortgage source which may encourage a more liberal attitude toward the project if the architect is in good standing in such financial quarters.

In addition to taking deferred payment for commissions, many architects are finding it expedient to make small cash investments during the early stages of the development of building projects. Often this direct investment helps materially in bridging the gap between credit financing and money available for the use of the owning company. Thus the architect's deferred fee, or fee and investment, is made repayable to him within a comparatively short period and provides not only a substantial commission but often a handsome profit in the transaction. Perhaps the most specific manner in which to demonstrate the method under which many large building projects are being made possible, to the ultimate profit of the architect, we may cite several examples, selecting first an instance in the field of co-operative apartment house promotion.

One large apartment project now under construction in New York was developed by a real estate firm under these conditions: The first step was to arrange with a real estate operator to purchase the necessary land and turn it into the owning company in the form of a second mortgage on the completed project which included an excellent margin of profit on the land. The next step was to seek the services of an architectural firm which indicated its willingness to prepare sketch plans and outline specifications for the purpose of tentatively arranging the mortgage loan. Working closely with the architects on this project, an experienced general contractor provided a fairly close estimate of the cost so that, with liberal allowances for the fluctuations of the building material and labor markets, an up-set price could be established in order to safeguard the interests of prospective tenant-owners. A complete description, including sketch plans and outline specifications covering the proposed project, was presented to a mortgage company, and a general agreement was entered into covering the amount of mortgage financing which might be expected in the form of a building and permanent first mortgage loan. This left an equity amount of approximately 50 per cent of the total cost which was to be provided through the sale of stock to prospective tenant-owners. A corporation was then formed, capitalized to the amount of this equity. The stock in this corporation was apportioned in accordance with the sizes of the various apartments and carried with the purchase the usual tenant privileges involved in a co-operative apartment house project.*

At this point the business phase of the architects' service proved its value in several ways. Their first step was to agree to take part of a liberal fee in the form of stock in the corporation, and in addition to this they entered a cash subscription covering three of the apartments which they felt could readily be disposed of as soon as the building approached completion. This, of course, was a matter of business judgment and involved a knowledge of the local market for apartment sales and rentals, but it provided the nucleus necessary for the immediate carrying out of the project. In this way the architects enjoyed not only a liberal commission for their work but actually participated in some of the investment and promotion profits of the transaction. Of course to operate in this manner requires an amount of liquid capital, but in many instances architects are in a position to bring in acquaintances or business connections for the purposes of financing of this character. In fact, we know of several architects who are considered money-makers for those who invest with them in assisting toward the completion of the financing of projects.

Another interesting co-operative apartment project will soon be announced involving an expenditure of over $1,000,000 for the building. The history of the business development of this operation is interesting and instructive. The original idea was conceived by a real estate man who felt that a large co-operative apartment house would prove successful in a certain residential district. Having neither land nor money himself, but knowing a group of individuals who would be interested in purchasing tenant-ownership in such a building, he proceeded in this fashion: First, he located a piece of land which was satisfactory for the purpose and on which he was able to obtain a short-term option at a favorable price. This price was approximately $200,000 and the landowner agreed to take $50,000 in cash and to allow the balance of the purchase price to be paid in the form of a second mortgage on the completed project. At this step it was evident that if the necessary $50,000 could be found for the purchase of the land it would be possible to arrange mortgage financing and deferred payments of architects' and contractors' fees which, with the sale of stock to tenant-owners, would make possible the entire operation. To attempt to sell stock in a co-operative building venture with the entire plan on paper only is usually a waste of time, and it is far better to concentrate upon an intermediate step which insures ownership of the land and the arrangement of mortgage financing. The promoter's problem in this case was, first, to find the $50,000 necessary to insure the purchase of the land, and this he proceeded to do.

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*The various details of tenant ownership are fully explained in The Architectural Forum for July, October and November, 1922.

He approached three prospective tenant-owners who had some money, and offered them a chance to provide $10,000 each as their contribution to the $50,000 pool for purchasing the land, with the understanding that the land would be put into the new corporation at a substantial profit and that the original investment would be returned to the prospective tenant-owners in the form of stock in the new company, carrying the privilege of occupancy. This left a balance of $20,000 to be provided. The promoter next approached an architect who had had considerable experience in designing apartment houses but who had never developed a co-operative apartment project. After the location and type of building were carefully described, the architect realized that it was a sound building project and agreed to provide the necessary architectural service on a deferred payment basis and, furthermore, to secure $10,000 of the $50,000 buying pool, which he provided through friends interested only in the real estate profit involved. This left $10,000 to be raised, and a logical source was found to be a well known general contractor who, in view of a possible large contract on liberal terms and with little possibility of there being investment loss, agreed to put up the final $10,000 to make possible the purchase of the land.

The land was then purchased, and having sketch plans and outline specifications, tentative arrangements were made for the mortgage financing. Working drawings and specifications were then completed and an up-set contract price determined in order that the owning company might be incorporated for the equity. This incorporation having been established, the land was turned in at a substantially increased price, the profit going to the original contributors to the buying pool. At this point all arrangements had been completed for offering tenant-ownership stock for sale. A part of this was immediately taken up by the group of prospective tenant-owners which was the original inspiration for the promoter's efforts, and at the present time over 60 per cent of the stock has been sold, insuring the immediate beginning of construction. In this instance the architect, through the use of business judgment and the ability to recognize a sound business proposition, was able to assist materially in the first stages of promotion, with the result that he has on his boards a large project on a liberal commission basis. As the sale of the stock progresses his commission is being paid rapidly, and it is evident that within one year his entire deferred interest will be repaid.

From the viewpoint of the architect, the power of business analysis of a proposed building project should be developed not only as to financing but also in respect to the actual efficiency of purpose of the building or what might be termed the "service character" of the design. There are two elements which control the success of the average investment building, whether it be an apartment house, office building, hotel or of other rental earning type. These elements are, first, the efficiency of plan, and, second, the efficiency of management. There can be no question but that too many of our investment buildings in the United States have been designed without close co-operation with those who must ultimately manage the business of the building. The result is that operating companies and building managers often have reason to find fault with architects, since buildings are frequently planned in ways which interfere materially with profits.

It is quite obvious that the architect can in but few cases be thoroughly familiar with the detailed problems of renting and maintenance, and the logical step for him to take is to arrange with the owners for consultation with those who will have the responsibility of managing the building after it is completed. In each of the special classes of investment buildings, expert management service has been developed, and it might well be said that in the field of apartment houses and office buildings the function of building management has now been developed until this might be termed a new profession of considerable importance in the economic scale. In the hotel field it is quite customary that a division of investment interest be established. The building is often financed by one group and leased to an operating company which usually provides the complete furnishings. The profits of the owning company are derived from the rentals on land and building, together with any increment value which may be enjoyed, while the profits of the operating company are received directly from the operation of the building. To call in the building manager or the hotel expert at the time when plans are in preliminary stages seems a simple and logical proceeding, but unfortunately in many instances this is not done.

Architects are beginning to realize fully the importance of this measure, and that recommendations to the owner which include bringing in various types of specialized consulting service are not confessions of weakness but indications of giving real service. An interesting example of the far-reaching effects of this policy may be pointed out by a brief description of a recent hotel project which was brought to the attention of the Consultation Committee of The Forum. The hotel, as originally designed for erection in an important city in the United States, involved a building expenditure of over $7,000,000, and tentative arrangements had been made for a $3,000,000 first mortgage loan. The plans had been developed in what seemed to be a logical way, but no practical hotel man had been consulted in regard to the actual features of operation. After reading an article which appeared in The Forum under the heading "Practical Points in Hotel Planning," by Daniel P. Ritchey, the architect sent in his plans to The Forum's Service Department asking for recommendations and practical criticism. An examination of these plans by a hotel expert indicated many radical changes desirable from a service viewpoint and from that of probable changes in the neighborhood. Negotiations which followed resulted in the appointment of a practical hotel man to render advisory service on plans and to open the hotel and put it on a running basis during the year following completion of construction. After the plans had been made thoroughly practical from the viewpoint of the operating company, and the various financial interests were brought to realize the importance of the changes which had been made, several interesting occurrences took place. The first mortgage was increased by almost $1,000,000 without any increase in the cost of land and building; deferred credits for furniture and other items were arranged, because of confidence in the management of the building, and totaled almost $700,000, which directly reduced the amount of equity necessary in the early stages of the operation, and an extensive amount of interesting publicity was developed because of the official connection with the project of a man who is recognized as an authority in hotel management. In fact, it was through the common sense of the architect in seeking advice that many of the business difficulties facing the project were eliminated and success was made certain, where under the original plans the project would probably not have materialized, and a serious loss might have been incurred by the owners who had already invested in land and excavations. This is but another example indicating the possibilities which exist for the architect who will give consideration to the business elements involved in the average project.

Architects who are not in a position to provide cash investments will usually find that they have a certain amount of time which can be invested, particularly in the development of smaller projects, and it is wise business procedure to undertake some work under these conditions. Many architects have built up large practices through small beginnings in which the original investment was of time only.

It is interesting to note that good architecture is stimulated rather than adversely affected under these somewhat involved business conditions. In cases where the architect enters into a project on a basis of deferred commissions he is usually allowed more latitude in carrying out his design of the building. An analysis of the business methods behind various building projects will show that practically every building of inferior architectural design has been constructed either without the service of an architect or under a limited expenditure for architectural service which precluded securing the services of good architects and discouraged all efforts to achieve either good design or good construction because of the "penny-wise" attitude of the owners.

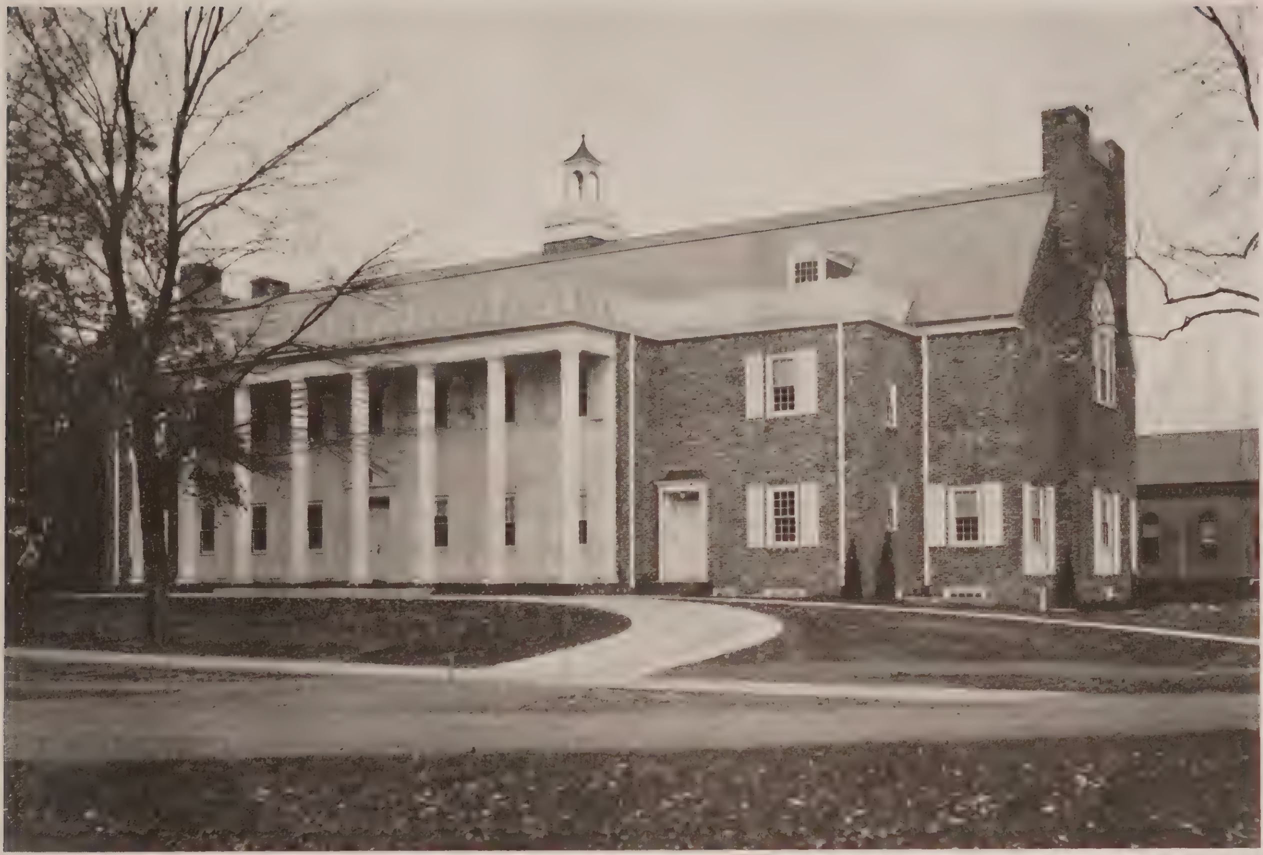
Another most interesting situation has been developing in the building construction field during the past few years which involves the sound business judgment of the architect in bringing into relationship with the project certain forms of specialized and consulting service to meet specific problems which arise in connection with the design, construction, equipment and administration of a building.

The general impression of the building public has for many years been that the architect must be a person of almost omniscience in that he is expected to have detailed knowledge of all structural and management requirements which may arise in connection with buildings of any type. It is true that there are architects who specialize in particular building types and who have developed organizations in which this knowledge is completely compassed. This type of architectural organization is somewhat uncommon, however, and in general it may be said that an important part of the service which an architect may render to a client is to recognize the need for specialized service and to recommend the employment of well qualified advisers.

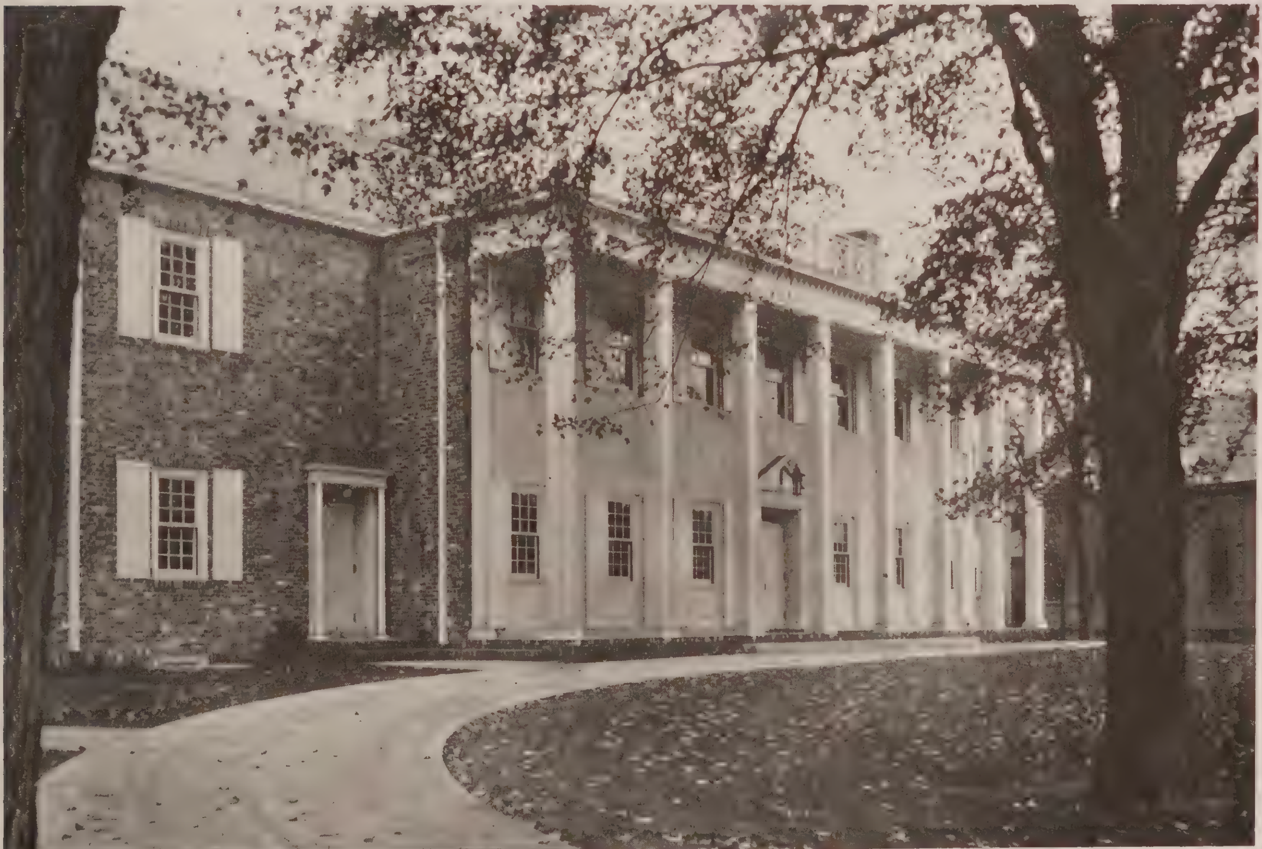
The various types of consulting engineering service are quite familiar to architects, and in the solving of involved problems of plumbing, heating or ventilating systems, or problems arising out of difficult foundations and substructure conditions, the architect has become fairly well accustomed to calling in the service of engineering specialists. There are other phases of consultation service, however, with which he is not so familiar, and in many instances the failure to arrange for such service has resulted in deficiencies of plan or equipment which represent a direct investment loss to the investor and add difficulties in connection with the administration.

A typical advisory service which does not receive sufficient consideration on the part of the architect is that of the building manager who will control the renting and maintenance of the structure after it is completed. In the early stages of preparing plans the architect will find it of great advantage to determine whether or not the owner has selected a building manager, and if not to recommend that this be done immediately in order that his advisory services may be introduced to the advantage of both owner and architect.

It will be found that the competent building manager has a thorough knowledge of rental requirements not only as to sizes and shapes of spaces, but in respect to mechanical equipment, interior finish and the various utility features of the building. Having a definite knowledge of the most advantageous type of rentable space, he is in a position to suggest a rearrangement of room divisions and sizes to provide at once the most economical and the most easily marketable spaces of the type provided in the building in question. In relation to mechanical equipment, interior finish and other features which contribute to administration expense, he will have valuable suggestions to make which will tend to decrease labor cost, replacement and depreciation costs during the life of the building. This intimate advisory relationship will be found of constant value as plans are developed, and serves to safeguard the interests of the owner.



GENERAL EXTERIOR VIEW

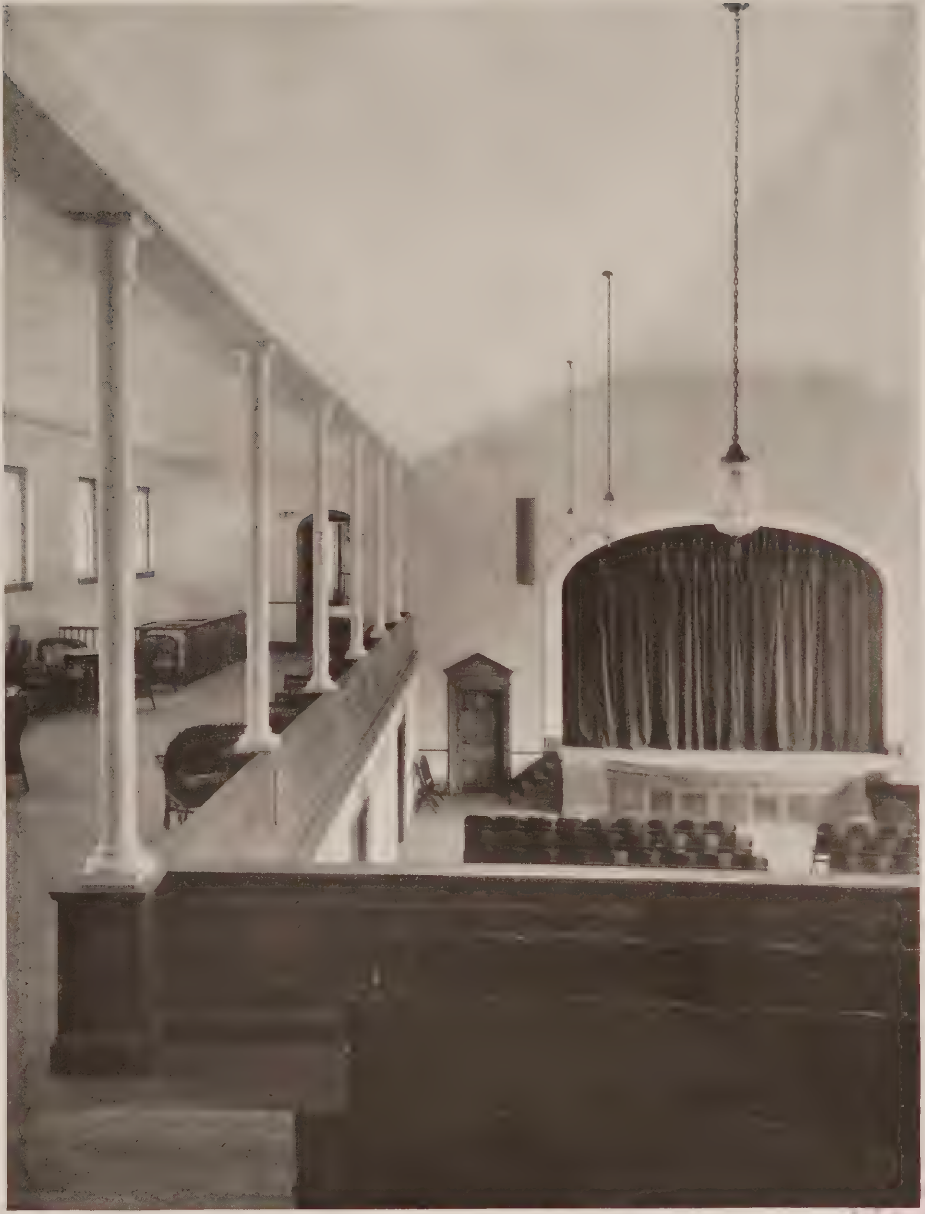


DETAIL OF PORTICO

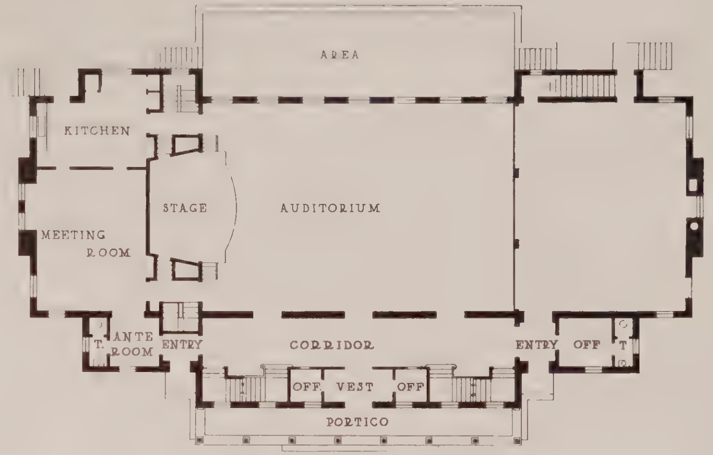
FIRST PARISH COMMUNITY HOUSE, LONGMEADOW, MASS.

SMITH & BASSETTE, ARCHITECTS

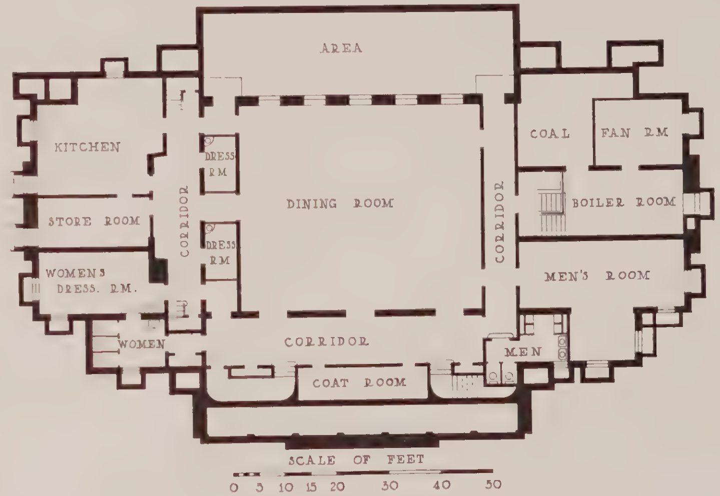
Photos by Paul J. Weber



AUDITORIUM FROM THE GALLERY

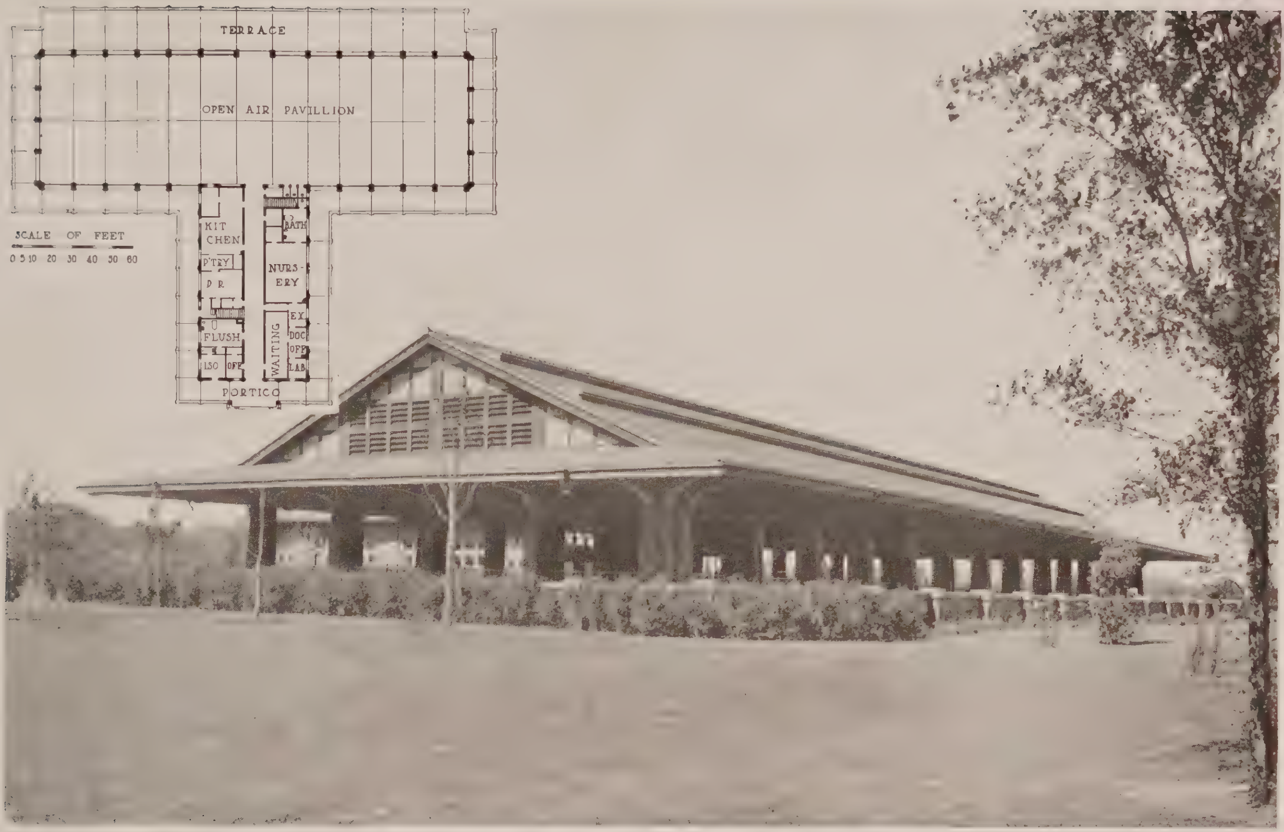


FIRST FLOOR PLAN

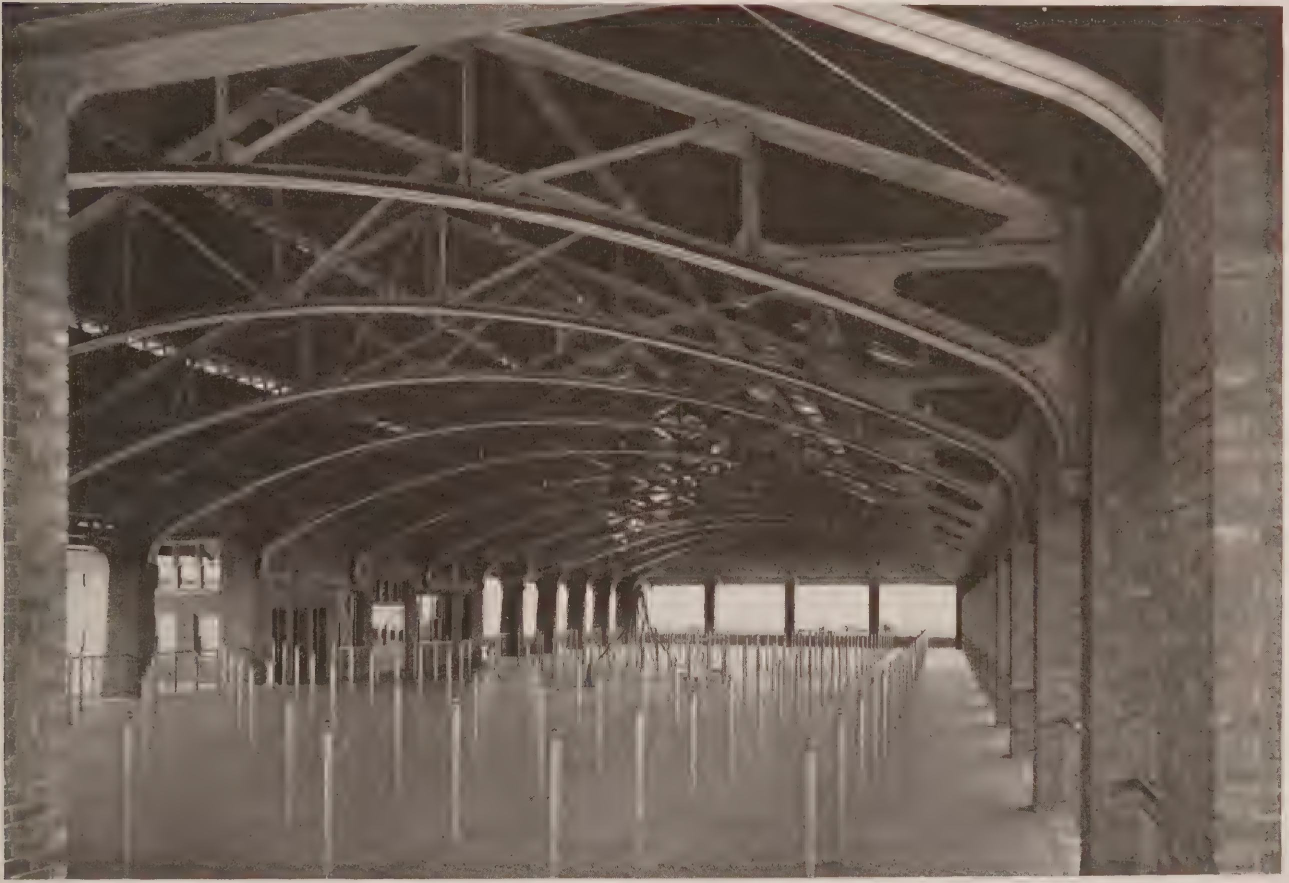


BASEMENT FLOOR PLAN

FIRST PARISH COMMUNITY HOUSE, LONGMEADOW, MASS.
SMITH & BASSETTE, ARCHITECTS



GENERAL EXTERIOR AND FLOOR PLAN

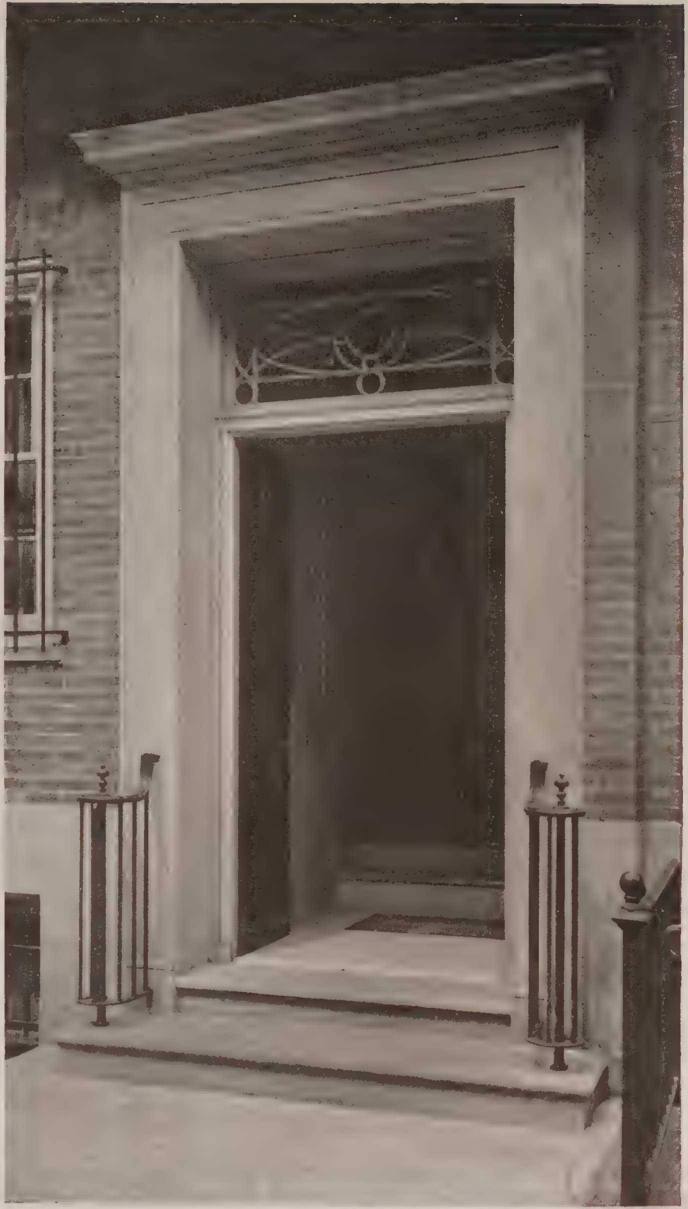


INTERIOR VIEW SHOWING PROVISION FOR HAMMOCKS

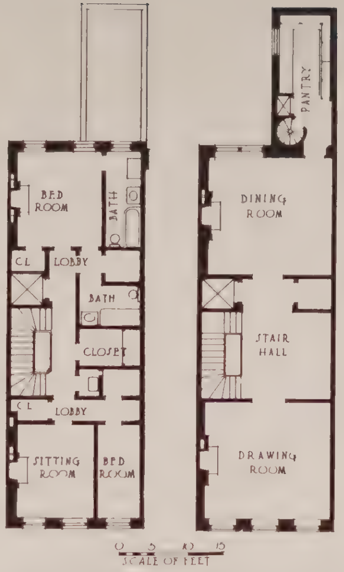
DAILY NEWS SANITARIUM, LINCOLN PARK, CHICAGO

PERKINS, FELLOWS & HAMILTON, ARCHITECTS

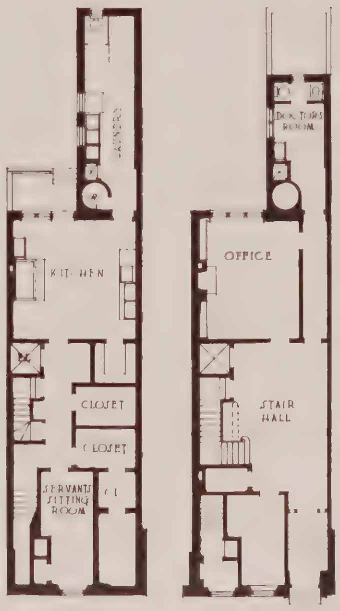
Photos by Henry Fuermann & Sons



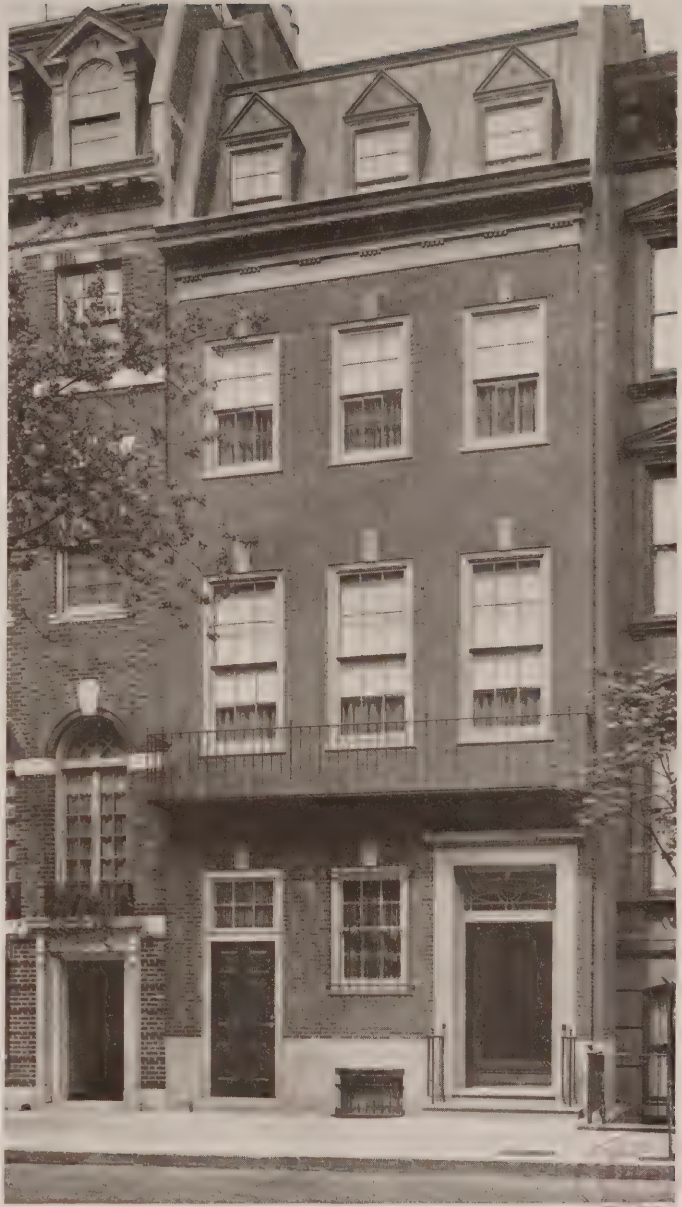
DETAIL OF ENTRANCE



THIRD FLOOR SECOND FLOOR



BASEMENT FIRST FLOOR

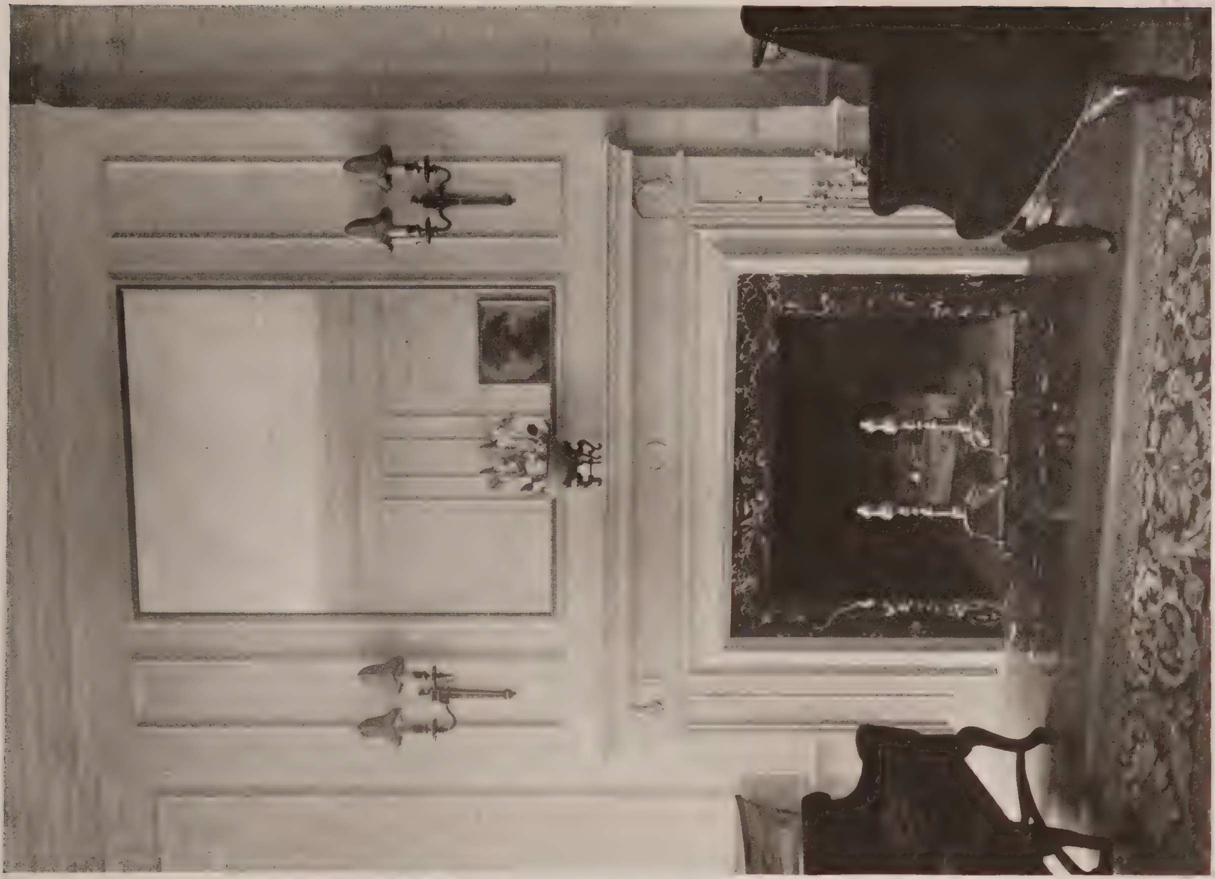


GENERAL VIEW

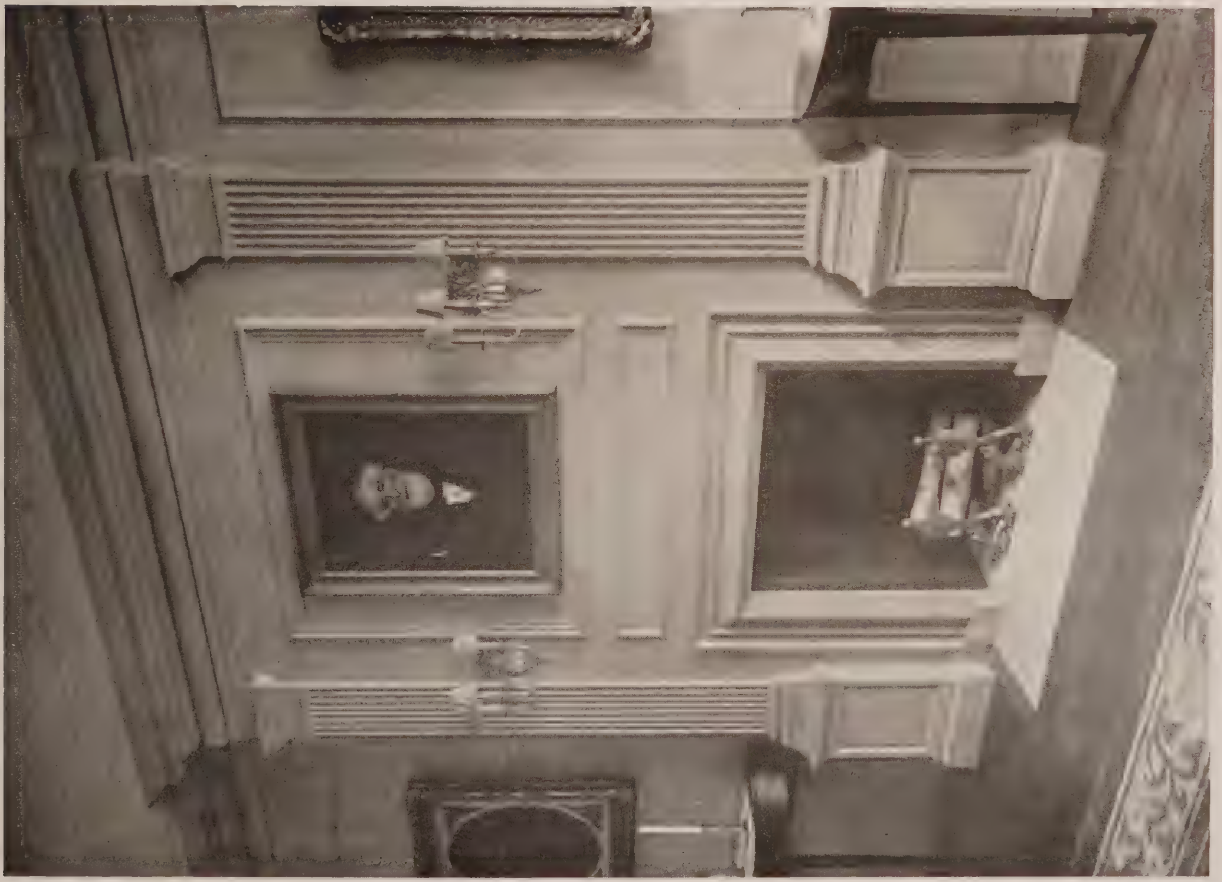
HOUSE OF DR. SAMUEL MILBANK, 117 EAST 65TH STREET, NEW YORK

EDWARD M. WHEELER, ARCHITECT

Photos by John Wallace Gillies



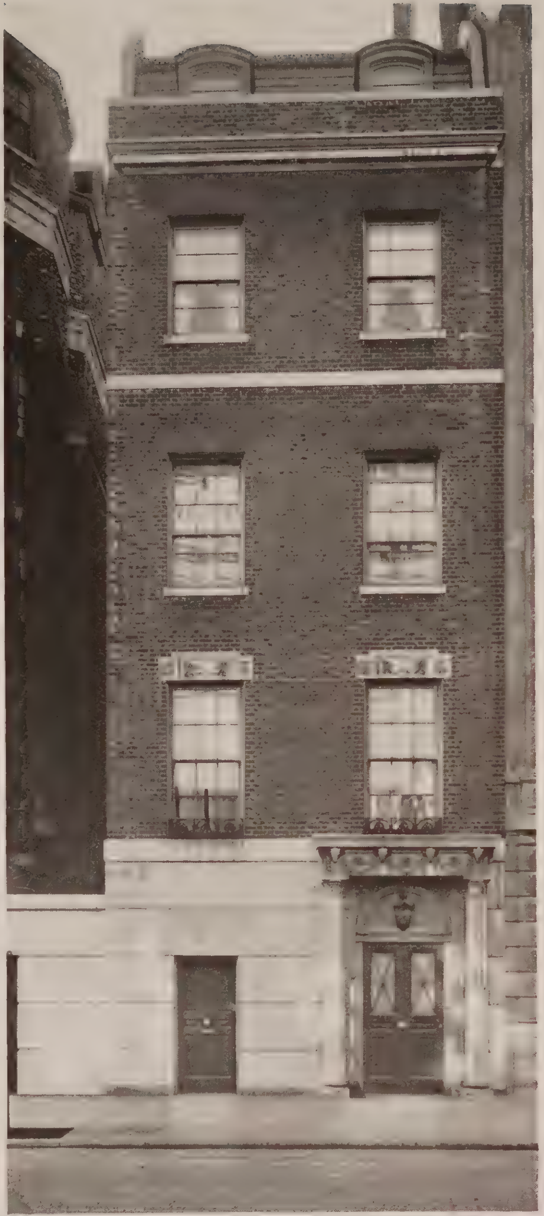
LIVING ROOM MANTEL



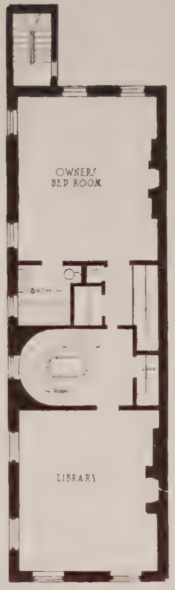
DINING ROOM MANTEL

HOUSE OF DR. SAMUEL MILBANK, 117 EAST 65TH STREET, NEW YORK

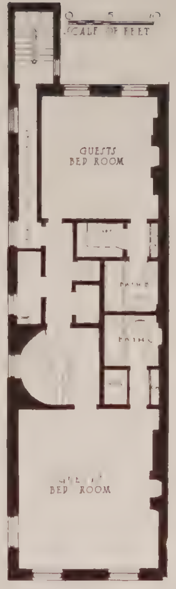
EDWARD M. WHEELER, ARCHITECT



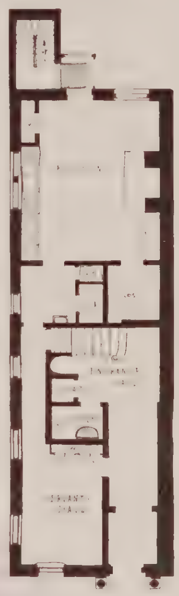
GENERAL VIEW OF FACADE



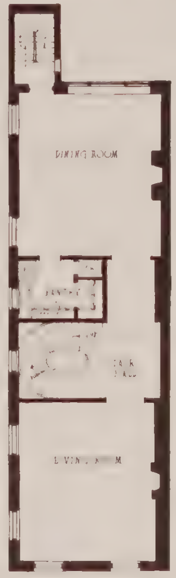
SECOND FLOOR



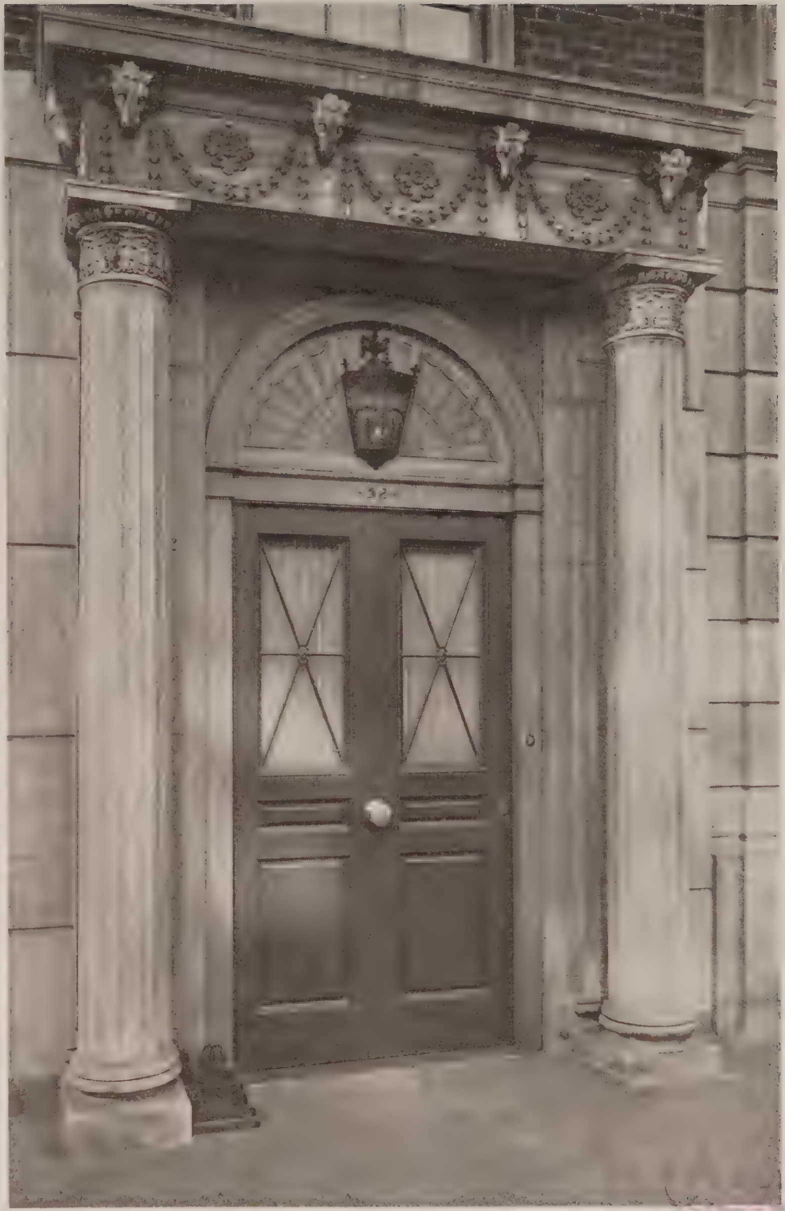
THIRD FLOOR



BASEMENT



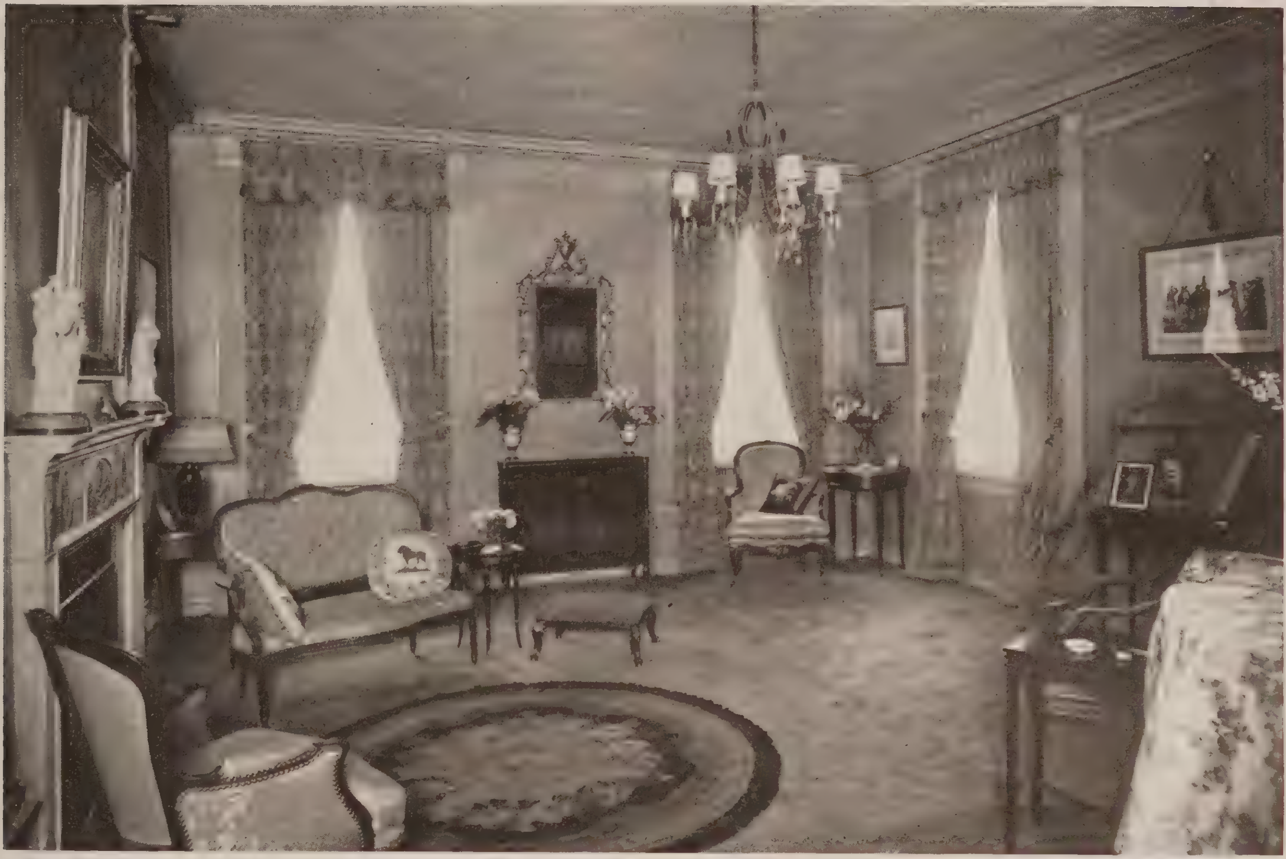
FIRST FLOOR



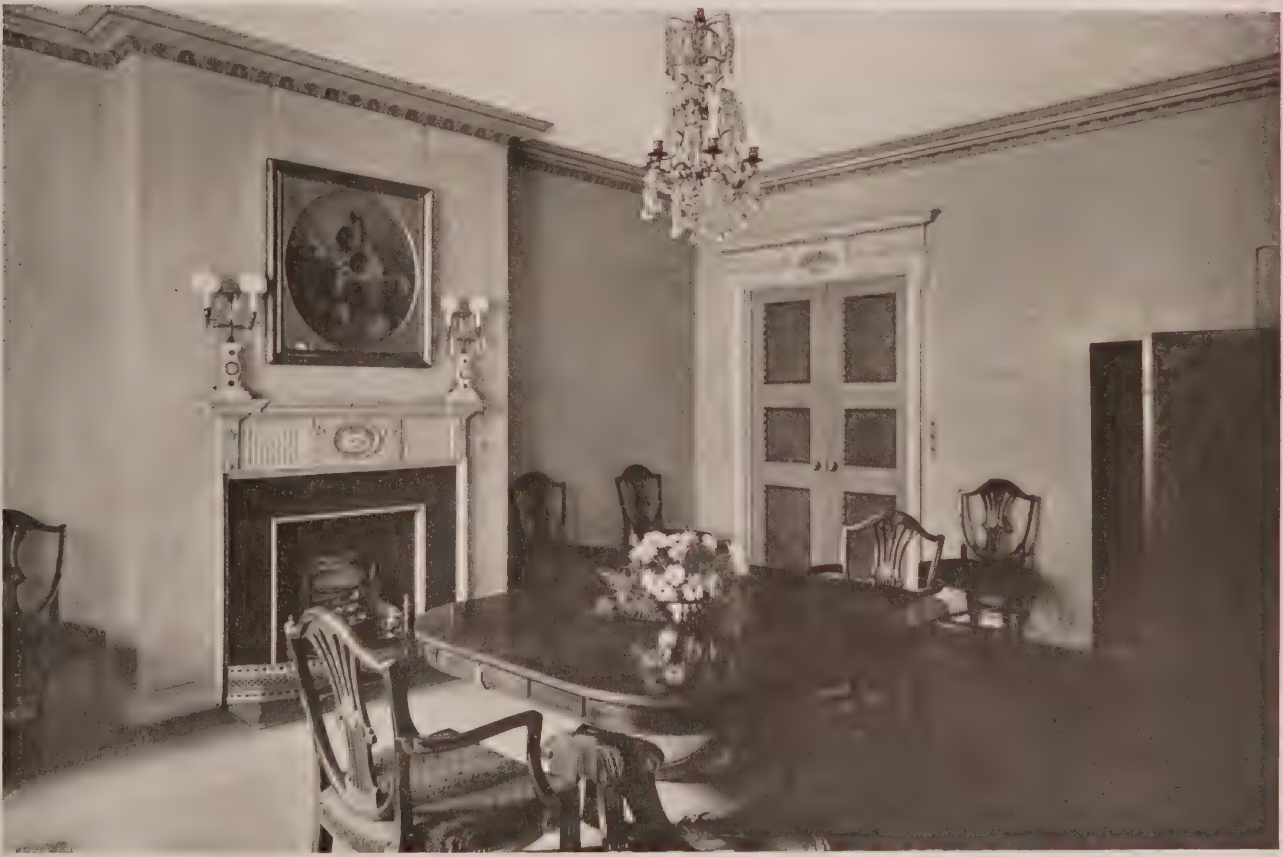
DETAIL OF ENTRANCE

HOUSE OF HARVEY D. GIBSON, ESQ., 52 EAST 69TH STREET, NEW YORK

WALKER & GILLETTE, ARCHITECTS



DRAWING ROOM



DINING ROOM

HOUSE OF HARVEY D. GIBSON, ESQ., 52 EAST 69TH STREET, NEW YORK

WALKER & GILLETTE, ARCHITECTS

ENGINEERING DEPARTMENT

Charles A. Whittemore, *Associate Editor*

The Use of Handbooks

ACCOMPANIED BY DISCUSSIONS OF DEFINITE PROBLEMS IN WOOD AND STEEL FLOOR FRAMINGS

PART I

By E. F. ROCKWOOD, *M. Am. Soc. C. E.*

THERE are certain handbooks published to aid architects or engineers in the designing of floor slabs, beams and girders, columns and other structural members, and these same handbooks contain much other useful information on loads on floors, weights of materials, allowable stresses and functions of members.

For wood construction, the Southern Pine Association publishes the "Southern Pine Manual," and the West Coast Lumbermen's Association the "Structural Timber Handbook of Pacific Coast Woods." For steel construction handbooks or "pocket companions" are published by the Carnegie Steel Co., the Cambria Steel Co. and Jones & Laughlin. For concrete the Corrugated Bar Co. publishes "Useful Data," and in addition there are many textbooks on reinforced concrete construction which contain useful tables, such as Taylor & Thompson's "Concrete Plain and Reinforced," Turneaure & Maurer's "Principles of Reinforced Concrete," Thomas & Nichols' "Reinforced Concrete Design Tables," and an entire series of books by Hool & Johnson.

It might be well to mention two structural slide rules which the author has found very useful. They are the "Merrit Beam Scale" and the "Wager Timber Scale," and both may be procured through houses selling architects' and engineers' supplies. The author has never seen for sale a satisfactory slide rule for concrete. He has made several himself and has published them in the *Architectural Review* of the Massachusetts Institute of Technology, and in the *Journal of the Boston Society of Civil Engineers*, but has never manufactured and sold them.

For an architect or engineer who is thoroughly familiar with the principles of the design of structures, these handbooks can save a lot of time and computation, and such a man can best learn how to use them by studying them and finding out what is in them and where it is. And once that is learned, he can easily discover for himself how to use them to get the best out of them. On the other hand, there are many architects who have never studied structural design or who have forgotten most of it. If such a man could, by referring to a handbook, design or check a simple floor, he would find it of great help. It is for such an architect that this article is written, but particular emphasis must be laid on the fact that "a little knowledge is a dangerous thing" and that a thorough training in both the principles and practice of design is necessary for all but the simplest cases.

The designing of any structural member divides itself into two parts, first finding the loads carried by that member, and next finding the size member necessary to carry those loads. The first step is the same whether the member be wood, steel or concrete, and is to determine what are the loads coming on that member and how they are applied.

Determining Live and Dead Loads

Structures carry two kinds of loads—live loads and dead loads. Live loads consist of the weight of contents of buildings,—carriages, cranes, etc., and their supported loads, machinery, merchandise, persons or other moving objects, the support of which is the purpose of the structures, also snow and ice, and wind stresses. Live loads vary with the character of the structure and its proposed use. In buildings they consist of uniform loads per square foot of floor area, and concentrated loads, such as weight of heavy safes or machinery, which may be applied at any point on the floor. In most cities the minimum live loads to be used are fixed by public ordinances and are intended to cover general conditions, but do not include machinery or other concentrations. If such concentrations occur on floors, special provisions should be made for them in the framing. Dead loads consist of the actual weight of the structures themselves with the walls, floors, partitions, roofs and all other permanent construction and fixtures. They can be calculated from the known weights per unit of the materials composing the floors, walls, partitions or other permanent construction. The dead loads stress the structure at all times and the building must be proportioned to sustain them at all times without reduction. The live loads, on the other hand, may be taken at their full values or reduced in accordance with the probabilities that the structure as a whole or its principal members will not be subject at all times to the full theoretical loading.

A study of recent building codes and of good practice leads to several suggestions regarding live loads.

Live loads shall include all loads excepting dead loads. All floors and stairs shall be of sufficient strength to bear safely the weight to be imposed thereon in addition to the dead load, but shall safely support a minimum uniformly distributed live load per square foot as specified in this table:

Class of Building	Pounds per sq. ft.
Armories, assembly halls and gymnasiums	100
Garages for more than two cars	150
Hotels, lodging houses, boarding houses, clubs, convents, schools, colleges, hospitals, asylums and detention buildings;	
Public portions	100
Residence portions	50
Wholesale stores, heavy manufacturing and storage buildings	250
Retail stores, light manufacturing and storage buildings	125
Office buildings;	
First floor	125
Other floors	75
Public buildings;	
Public portions	100
Office portions	75
Residence buildings, including porches	50
Stairs, corridors and fire escapes from armories, assembly halls and gymnasiums	100
Stairs, corridors and fire escapes excepting from armories, assembly halls and gymnasiums	75

Every plank, slab and arch, and every floor beam carrying 100 square feet or less, shall be of sufficient strength to bear safely the combined dead and live loads supported by it, but the floor live loads may be reduced for other parts of the structure in this manner:

In public garages, for all flat slabs of over 300 square feet area reinforced in more than one direction, and for all floor beams, girders and trusses carrying over 300 square feet of floor, and for all columns, walls, piers and foundations, 25 per cent reduction.

In all buildings excepting armories, garages, gymnasiums, storage buildings, wholesale stores and assembly halls; for all flat slabs of over 100 square feet area, reinforced in two or more directions, and for all floor beams, girders, or trusses carrying over 100 square feet of floor, 10 per cent reduction.

For the same buildings, but carrying over 200 square feet of floor, 15 per cent reduction.

For the same structures, but carrying over 300 square feet of floor, 25 per cent reduction.

These reductions shall not be made if the member carries more than one floor, but instead reductions in accordance with the following table should be made:

In all buildings excepting storage buildings, wholesale stores and public garages, for all columns, girders, trusses, walls, piers and foundations:

Carrying	one floor,	same reduction as for flat slabs, beams, girders and trusses.
"	two floors,	25 per cent reduction.
"	three floors,	40 " " "
"	four floors,	50 " " "
"	five floors,	55 " " "
"	six floors or more,	60 " " "

Roof Live Loads

Roofs shall be designed to support safely minimum live loads according to this manner:

Roofs with pitch of 4 inches or less per foot, a vertical load of 40 pounds per square foot of horizontal projection applied to either half or to the whole of the roof.

Roofs with a pitch of more than 4 inches and not more than 8 inches per foot, a vertical load of 15 pounds per square foot of horizontal projection and a wind load of 10 pounds per square foot of surface acting at right angles to one slope, these two loads being assumed to act either together or separately.

Roofs with a pitch of more than 12 inches per foot, a vertical load of 5 pounds per square foot of horizontal projection and a wind load of 20 pounds per square foot of surface acting at right angles to one slope, these two loads being assumed to act either together or separately.

Pressure on Vertical Faces

All buildings and structures shall be calculated to resist a pressure per square foot on any vertical surface:

For 40 feet in height,	10 pounds.
Portions from 40 to 80 above the ground,	15 "
Portions more than 80 feet above the ground,	20 "

The next step is to determine the amount of load coming on a given member and how it is applied. In most types of floor construction the load is carried primarily by the flooring, floor arches or floor slabs. These in turn are carried by floor beams, these by girders or walls, and finally by walls or columns which are carried by the foundations. Excepting for heavy concentrations the flooring carries a uniformly distributed load, and all that is necessary is to take a strip of floor 1 foot wide and to find the total load coming on that strip for the given span. The span of a floor, excepting a concrete floor, is the distance from center to center of supports. The span of a concrete floor may be the same or it may be taken as the clear distance between supports, but in either case the tables in the handbooks will show which to use. Most floor beams are loaded uniformly, and the loads coming on them may be considered to be the total loads on the floors halfway to the adjacent beams, plus the dead load of the beams themselves and of any partitions or walls carried by the beams. Girders carry concentrated loads, consisting of the reactions of the beams framing into them, plus the uniform loads of their own weights and of any walls or partitions running along them. The reactions of uniformly loaded beams are one-half the total loads on them. The simplest way of figuring a girder is to substitute for the concentrated loads equivalent uniformly distributed loads. In the case of a girder with a single concentration at the center, the equivalent uniformly distributed load is twice the concentration. For a girder with equal loads at the third or at the quarter points, the equivalent uniformly distributed load is 4/3 the sum of the concentrations. For any other combination of loading the equivalent uniformly distributed load can be found in the handbooks, but it is safer and better to employ a trained engineer for such a case. Columns carry the reactions of all beams and girders framing into them, but in practice it is customary to consider that they carry all the load halfway to the adjacent columns, and excepting in very unusual instances this method is safe.

Selecting Members for Given Loads

The next step is to select the proper member to carry these loads. Two factors determine the size of the member required to carry a given load, viz., the allowable stresses in different portions of that member and the allowable deformation of that member. In a very rough and elemental way it might be said that columns are subjected to compressive stresses and fail by the material crushing or buckling, while beams are subjected to both bending stresses and shearing stresses—a wooden beam may fail in bending by the crushing of the top fibers or pulling apart of the bottom fibers at the point of maximum moment. It may also fail by shearing or splitting apart in a horizontal plane at its support. Similarly, a steel beam may fail in bending by crushing at the top and pulling apart at the bottom or it may fail in shear or by buckling of the web at the supports. Of course when crushing at the top is referred to, the case of a beam supported at both ends is meant, as in a cantilever beam the crushing occurs at the bottom. Columns may also be subjected to both direct load, which causes compressive stresses, and to bending, which increases the compressive stresses on one flange and reduces them on the other. So to design a member it is necessary to know what stresses are allowable, and if a table is used it must agree or be corrected to agree with the stresses selected. Of course the allowable stresses are not the stresses that will cause failure, and the ratio between those causing failure (the ultimate stresses) and those used (the working stresses) is known as the "factor of safety." The proper factor of safety depends, among other things, upon the reliability of the material, the probability of the chosen loads being correct, the kind of load (whether steady or vibrating, and whether being a constant load or only one that will occur very rarely), and the use of the structure, whether for permanent or temporary use.

The second factor in determining the size of member is the allowable deflection. Experience has shown that deflections of more than 1/360 of the span will crack plastered ceilings, and even where there is no plaster it is advisable to keep the deflections small as the structure is much stiffer and freer from vibration when the deflections are small.

Wood Floor Framing

The way to use the handbooks is best shown by examples: required to design the floor of an ordinary house with a span from center to center of partitions of 15 feet,—the suggested live load for such a floor is 50 pounds per square foot. The weight of the flooring itself would be about 7 pounds per square foot. The spacing of the joists is determined by the lathing for the ceiling rather than by the strength of the ⅞″ under-flooring as that will safely span over 2 feet. The weight of the joists and ceiling will be about 8 pounds per square foot, and the usual joist spacing is from 12 to 16 inches center to center. For this problem assume a spacing of 16 inches center to center, then with a span of 15 feet the total load on a joist is 65 (the total load per square foot) times 1⅓ (the spacing in feet), times 15 (the span in feet) or 1,300 pounds. On page 326 of the "Carnegie Pocket Companion," 1913 edition, is a table for spruce beams 1 inch thick (or wide) based on an allowable fiber stress of 1,000 pounds per square inch (stress on extreme fiber in bending), which value is sanctioned by good practice. With this span a 1″ x 10″ will carry 741 pounds total load, and to carry 1,300 pounds total load will require a 2″ x 10.″ In order to avoid cracks in plastered ceilings, the deflection should not exceed 1/360 of the span. Referring to page 321 in the same handbook, we find that the maximum span for a 10″ timber should be 14′ 6″. Deflection varies with the fourth power of the load, so that with a 15′ span the deflection will be $\left(\frac{15.0}{14.6}\right)^4$ or 1.06 times as much. On the other hand, a load of 65 pounds per square foot (the design load) divided by 1.06, or 61 pounds per square foot, will not exceed this allowable deflection, and a load of that amount will probably never be actually obtained. Therefore it would be safe to use 2″ x 10″ joists 16 inches center to center.

Factory Floor Problem

As a more complicated problem take that of a factory floor with columns 16 feet apart each way. For light manufacturing, a live load of 125 pounds per square foot is sufficient. Such a floor would usually be built with yellow pine planks and beams, and for the best grade of such material a stress of 1,600 pounds per square inch is permissible. On page 40 of the 1920 edition of the "Southern Pine Manual" is a table for plank floors. With the given live load and the allowable stress, a 2½″ plank will span 8 feet, 6 inches, but the maximum span based on a deflection of 1/360 of the span is 5 feet, 7 inches. A 3″ plank under the same conditions will span 6 feet, 11 inches. Under these circumstances it would be good practice to space the beams 8 feet on centers. The maximum deflection to avoid plaster cracks is 1/360 of 8 feet or 0.27 inch. As deflections vary with the fourth power of the span, the deflection of the 2½″ plank will be $\frac{5.58\text{x}12}{360} \text{ x } \left(\frac{8.00}{5.58}\right)^4$ or 0.66 inch, and for the 3″ plank $\frac{6.92\text{x}12}{360} \text{ x } \left(\frac{8.00}{6.92}\right)^4$ or about 0.34 inch. Although such a floor would not have a plastered ceiling, it would probably be better to use the 3″ plank.

With beams spaced 8 feet center to center and spanning 16 feet, the load on each beam is the total load per square foot times the spacing of the beams in feet, times the span of the beams in feet. As the area carried by each beam is 8 x 16 or 128 square feet, it would be safe to reduce the live load 10 per cent. The total load on each beam is then 112½ (the reduced live load) plus 13⅓ (the dead load of the plank and upper flooring), times 128 or 16,100 pounds. To this must be added the weight of the beam itself or say 35 pounds times 16, or 560 pounds. On page 26 of the "Southern Pine Manual" is a table showing the "Safe Load in Pounds Uniformly Distributed for Yellow Pine Beams." This table is based on a fiber stress of 1,800 pounds per square inch, and to use it for 1,600 pounds fiber stress the loads given in it must be reduced in the ratio of 16/18 or the actual load as found above must be increased by 18/16 or to 18,700 pounds. For this revised load the table shows that a 10″ x 14″ beam will be required, and that such a beam will carry 18,260 pounds without excessive deflection. For deflection, the actual load on the beam (16,660 pounds) should be used and not the load as corrected for fiber stress as it is the actual load that produces the deflection. On page 30 is a table for 16″ beams, and a similar method shows that an 8″ x 16″ beam will be satisfactory. Such a beam will contain less material than a 10″ x 14″, and the question of head room will probably determine which size should be used to give the best results.

The girder carries an area of 16 x 16 or 256 square feet, and this will allow a live load reduction of 15 per cent. So the concentration at the center of each girder is 8 (the spacing of the beams in feet) times 16 (the span of the beams in feet), times ½ (½ the load on each beam is carried to each end) times 2 (the number of beams framing into the girder at its center), times 106 (the reduced live load in pounds per square foot), plus 13⅓ (the dead weight of the flooring in pounds per square foot), plus 36/8 (the weight of the beams per foot of length divided by their spacing in feet) or a total concentration of 15,900 pounds. The equivalent uniformly distributed load would be twice this amount or 31,800 pounds. To this must be added the weight of the girder, or say 900 pounds, which will give a total of 32,700 pounds. As with the beam, this must be multiplied by 18/16 because the allowable stress is only 1,600 pounds per square inch. The final corrected load is then 36,800 pounds and reference to the table on page 30 shows that this will require a 14″ x 16″. It might be preferable to use a steel girder, and a table on page 188 of the 1913 edition of the "Carnegie Pocket Companion" shows that with a span of 16 feet a 15″–42# I-beam will carry a uniformly distributed load of 39,300 pounds. As this table is based on a fiber stress of 16,000 pounds per square inch and as good practice allows that stress on steel, the correction for fiber stress does not have to be made. On page 177 of the same book is another table from which deflections can be checked. For a fiber stress of 16,000 pounds and a span of 16 feet the coefficient of deflection for uniformly distributed loads is 4.237, and this divided by 15 (the depth of the beam in inches) gives the actual deflection as 0.282 inch. Reference to the table on page 171 shows the deflection for a concentrated load to be 0.8 of this amount or 0.225 inch. 1/360 of the span is 0.53 inch. At this point it might be advisable to call attention to the fact that the weight given, 42 pounds, is the nominal and not the actual weight of the beam. The actual weight is 42.9 pounds, which is also shown in another table. As this latter table is on an unnumbered loose sheet, its location in the handbook cannot be given.

Steel Floor Framing

For the next problem assume the first floor of a steel-framed hotel with columns spaced 20 feet apart each way. For floor construction assume a clay tile ribbed slab. The live load should be 100 pounds per square foot. This type of floor construction will span economically 20 feet, and only one line of beams will be necessary excepting for small tie-beams the other way for erection purposes. On page 69 of the book "Useful Data," published by the Corrugated Bar Co., is a table for this type of construction based on stresses of 16,000 pounds per square inch on the steel and 650 pounds per square inch on the concrete, which stresses agree with good practice. This table is for interior spans and shows that a 10″ tile with a 2½″ topping and with 0.75 square inch of steel in each rib will carry a superimposed load of 118 pounds per square foot, and this amount will allow for flooring and a plastered ceiling in addition to the live load. On the preceding page is a table for end spans and a twelve tile with a 2″ topping and 0.82 square inch of steel in each rib will be required for such spans. These slabs will weigh 94 and 91 pounds per square foot respectively, so the uniformly distributed load coming on a beam will be 20 (the spacing of the beams in feet) times 20 (the span of the beams in feet), times 75 (the live load in pounds per square foot reduced 25 per cent), plus 112 (the dead weight of the slab, flooring and ceiling in pounds per square foot), plus 272/20 (the weight of the beam and its fireproofing in pounds per foot divided by the spacing of the beams in feet) or a total of 80,000 pounds. Reference to page 188 of the Carnegie book shows that this will require a 24″–69.5#-I, but as it may be hard to obtain this size, a 24″–80#-I will probably have to be used. On page 231 is a table which shows that a 15″–60#-I with two 9″ x ⅝″ plates will also carry the load. Such a riveted beam girder will weigh 18.3 pounds more per foot but will be 7½ inches shallower, and on that account may be preferable. The coefficient of deflection for such a beam is 6.62 which divided by 16½ (the depth of the girder in inches) gives an actual deflection of 0.4 inch. The span divided by 360 is 1⅛ inches.

Live Loads in Office Buildings

RESULTS OF INVESTIGATIONS BY C. T. COLEY, M.E.

Manager Equitable Building, New York

THE Building Code Committee of the Department of Commerce is engaged in compiling a survey covering the probable live loads in buildings of different kinds excepting private dwellings. It has been maintained by some engineers that such loads are being computed considerably in excess of what buildings are actually called upon to sustain. There is no way by which this important data can be secured, unless architects will place at the disposal of the committee such information as they may have or may be able to obtain. Data covering schools, churches, hotels, assembly halls, theaters, hospitals, workshops, factories, printing establishments, machine shops and public garages is particularly desired. The chairman of the committee is Ira H. Woolson, addressed care Department of Commerce, Washington.—*The Editor.*

DURING the latter part of 1922 a detailed investigation was made of live loads on several floors of the Equitable Building, New York. This structure is known as perhaps the largest office building in the world, and the varied nature of its occupancy made possible observations which should be useful in the designing of future office buildings and in the proper regulating of those already in use. The study was instituted by the Department of Commerce Building Code Committee, which is investigating the possibilities of greater economy in structural design, and the objects were to determine the maximum, minimum and average floor loads existing in actual office practice, the nature and distribution of such loads, and the relations which they should bear to the assumptions for design of floor slabs, floor beams and columns as governed by prevailing building code practice.

With this in mind it was necessary to determine the actual weights of office furniture and merchandise, also their locations with reference to partitions and floor beams. In order to cover a wide range of usual office building occupancies, three floors of the Equitable Building were selected, representing light, medium and heavy classes of occupancy, and the entire area of these three floors was surveyed. Several other offices on various floors, representing what appeared to be unusually heavy occupancy, also were investigated. The entire survey covered over 200 rooms. The investigation was planned and supervised by C. T. Coley, M.E., manager of the building. A force of five men equipped with platform scales and field books spent several days weighing and tabulating every article of furniture within the areas mentioned. Sketches were prepared for each office, showing the locations and weights of all articles of furniture, so that the distribution of loads could be quite closely determined. Figs. 1, 2 and 3 are typical examples of these sketches. The results form a most interesting and valuable collection of data and are believed to be of much significance both to the designers of office buildings and for the purpose of determining proper building code requirements.

There is included here a brief tabulation showing the outstanding features of the report on this study. It will be noted that little difference exists between the average loading of the floor selected as the heaviest in the building and that which appeared to the investigators at first glance to be loaded the lightest.

The weights given do not include the radiators, which averaged 200 pounds each, with two to each bay, located under the windows. These would add approximately 1 pound per square foot for all exterior bays. The weight of the partitions was not included in the calculations. These in general are 3-inch hollow tile, plastered on each side, and a careful weighing of one which was being removed showed a weight of 30 pounds per square foot, or approximately 350 pounds per running foot. The weight of occupants, taken at 150 pounds per person, is probably high, as a considerable number of such occupants are females, and some studies indicate that their average weight would not exceed 120 pounds.

MAXIMUM, MINIMUM AND AVERAGE LIVE LOADS IN EQUITABLE BUILDING

	No. of offices	Maximum lbs. sq. ft.	Minimum lbs. sq. ft.	Average lbs. sq. ft.
Light occupancy floor (20th)	67	55.4	.87	10.26
Medium occupancy floor (37th)	64	30.73	3.27	10.67
Heavy occupancy floor (11th)	62	33.84	5.00	13.96
Totals and averages	193			11.6
Selected heavy occupancies throughout building	14	78.3	21.4	42.4

Discussion of Results. The careful sketches of load arrangement have made it possible to throw some light on the prevailing method of assuming uniformly distributed live loads as a basis for floor design and help to indicate what relation such assumptions should bear to actual total loads. Examination of bays for which the live loads were more than 25 pounds per square foot showed wide variation in the distribution of such loads. The larger proportion was found, as might be expected, within a zone approximately 3 feet wide around the walls, the remainder being distributed variously in the centers of the rooms. In one or two cases, however, the major proportion of all the load was situated away from the walls, and this condition must be provided for by designers. There is also the probability that practically all furniture may be collected in the central portion of a floor area when occupants are moving, or when painting or cleaning is in progress.

The sketches show that the heavier loads, such as library shelves and double filing cabinets, are likely to be located away from walls and partitions. This is obviously for ease of access, and the same consideration demands that when the concentrated loads per square foot are excessive, generous unloaded floor areas should be provided adjacent to the concentrations so as to assure a safe distribution.

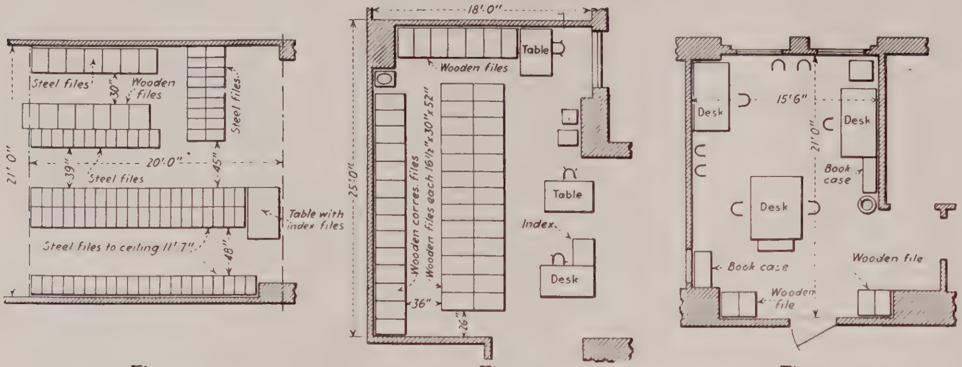


Fig. 1 Fig. 2 Fig. 3

Plans of Typical Offices Studied to Determine Floor Loads

Among the heaviest occupancies found is the stack room of a large law library. The entire floor area is covered with rows of steel stacks, placed back to back with 32-inch aisle spaces between rows, and extending from floor to ceiling, the story height being 11 feet, 7 inches. There is a main aisle 4 feet wide crossing the middle of the room at right angles to the stack rows. The total weight was taken as found and consisted of:

556 shelves of books@ 75 lbs.	41,700 lbs.
114 empty shelves@ 25 lbs.	2,850 "
Books on floor	500 "
7 ladders	100 "
2 persons@ 150 lbs.	300 "
Area 588 sq. ft.	45,450 lbs.

Load per sq. ft., 77.3 lbs.

It is evident that the possibility of all shelves being filled should be considered, and if this were assumed the average loading would be increased to 87 pounds per square foot.

Examination of all the floor sketches shows but eight articles of furniture (safes) over 2,000 pounds in weight. A number of sectional filing cases and bookcases with contents weighed much more, but these weights were distributed over such a large area they could not be regarded as concentrated. Of 36 safes and safe cabinets, 23 weighed less than 1,000 pounds; five between 1,000 and 2,000; two weighed 2,200; two 2,360; one 2,800; one 3,000; one 3,500; and one 4,250 pounds. This seems to indicate that if care in regulation of occupancies were exercised, considerable economies might be possible in providing for concentrated loads. To what extent such regulation is practical is a matter for deliberation.

As would naturally be expected, the live loads were found lightest next the outside walls. Single-row filing cases, cabinets, safes, bookcases and bins are usually placed against blank interior walls. Whether by accident or otherwise, the heavier loads were not found where partitions cut up the floor space into small rooms, indicating that allowance may not be necessary for both removable partitions and heavy floor loads. Several instances were found where two adjacent floor bays supported average loads of 25 pounds or more, but in no case were two adjacent bays found in excess of an average of 40 pounds per foot.

There are but few instances in the floor plans discussed where three offices or store rooms meet at the same column, and it is probable that this condition will be found but rarely in buildings with light and ventilation. In view of this and of the surprisingly light average floor loads discovered, it becomes an interesting question whether in a building of this type further reductions in loads assumed for column design could not be made with safety. The building was designed for a live load of 100 pounds per square foot on the first floor and 75 pounds on all others.

C. H. Blackall, architect, of Boston, and Arthur G. Everett, of the Boston building department, published in the *American Architect and Building News* for April 15, 1893, the results of their investigation of three prominent office structures of that city. Average weights for furniture were assumed, and the human occupancy was taken as the greatest known to have occurred in each of the offices investigated. Here is a resume of the results obtained:

Structure	No. of offices	Total area in. sq. ft.	Total wgt.	Av. wgt. per sq. ft.
Rogers Bldg.	41	18,127	294,984 lbs.	16.8 lbs.
Ames "	70	32,151	544,419 "	15.6 "
Adams "	99	26,183	425,109 "	16.7 "
Average				16.3 lbs.

The 10 heaviest loadings in each building averaged 25.9, 29.8 and 29 pounds per square foot respectively. The highest load found was 40.2 pounds per square foot, and in only 12.4 per cent of offices was the floor load in excess of 25 pounds per square foot, and in only 26 per cent did it exceed 20 pounds.

Mr. Blackall recently conducted a similar investigation of live loads in the Little Building in Boston, which is reported in the *American Architect and Architectural Review*, January 3, 1923. Sixty-four offices were surveyed, the results indicating live loads even smaller than those discovered in his earlier investigations. The maximum floor load was 14.7 pounds per square foot, and but four offices had loadings over 10 pounds per square foot. The minimum loading discovered was 1.3 pounds. A full interpretation of the data received discloses many significant facts which space does not permit of presenting here. A detailed report will be prepared as soon as sufficient information is obtained.

Foundations of New York County Court House

ENGINEERING SKILL, LATEST EQUIPMENT AND METHODS ADOPTED FOR PLACING MORE THAN A MILLION DOLLARS' WORTH OF BURIED STEEL AND CONCRETE

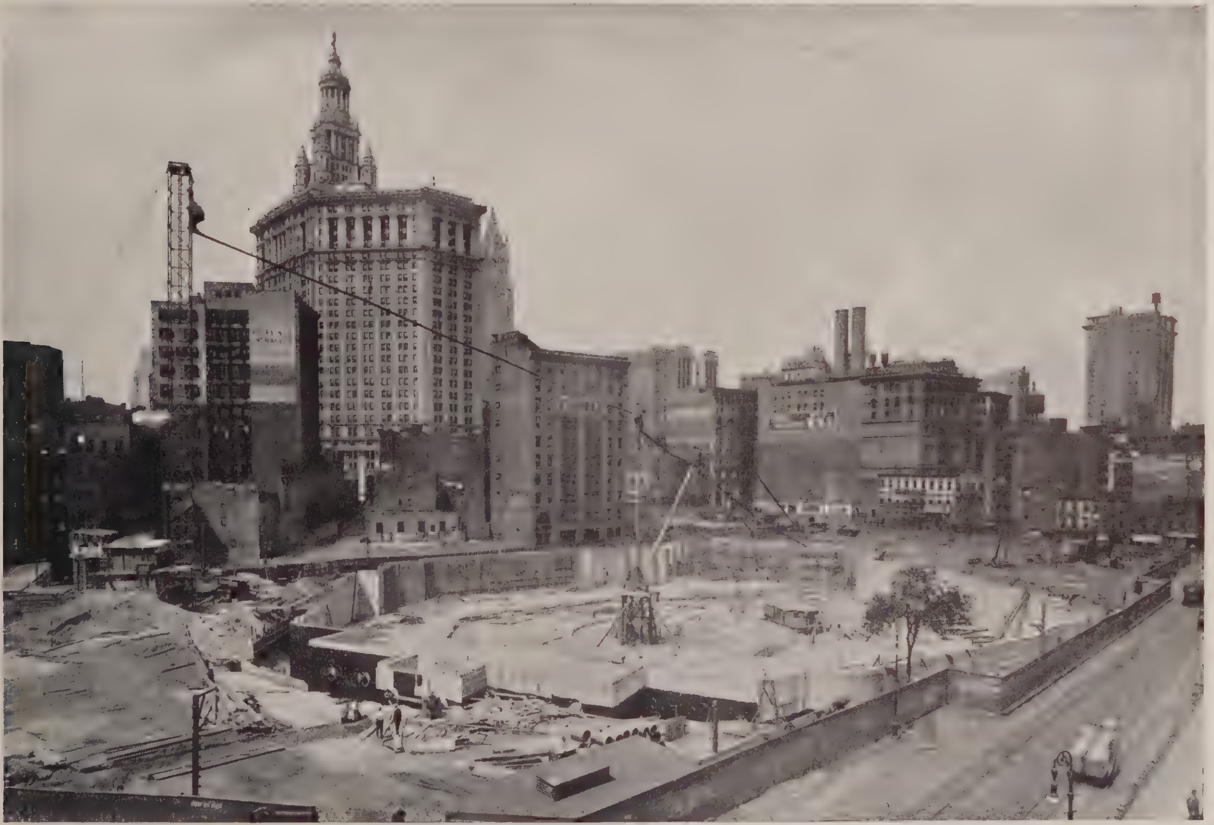
By FRANK W. SKINNER, *C.E.*

FROM the log cabin at the southern end of Manhattan Island, which sheltered the first Dutch officials, to the frame houses, brick buildings and so on, ever larger and better, to the present court house, New York County has provided continually finer and finer homes for its judiciary, until, to match its lofty Municipal Building with a whole city's equipment and population inside its walls, there is now being built a splendid new court house designed by Guy Lowell, to give a spacious and worthy home for the elaborate court machinery needed for the millions of citizens in New York County.

The beautiful 7-story building, 316 feet or nearly a city block in diameter, and 130 feet high above the street, is being constructed and equipped, like a modern office building, with skeleton steel framework, concrete floors, and brick walls encased with exterior granite, massive and imperishable. An office building of the same capacity, 8,000,000 cubic feet, would cost, under present conditions, about $8,000,000, which does not necessarily indicate very closely the final cost of this building for which many of the important contracts have not yet been awarded.

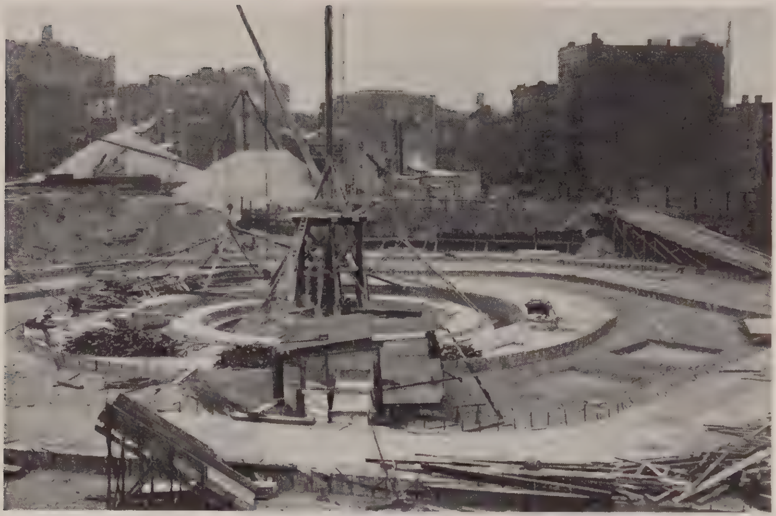
The site of the court house, formerly occupied by a number of old buildings, was unfavorable in that the soil, covered by an artificial fill and obstructed by large quantities of old foundations, consists of a stratum of sand reaching to hardpan and rock at a depth so great that no attempt was made to carry the costly foundations down to it, although they must be built in the very bed of an ancient stream still carrying a great flow of subterranean water that saturates the soil up to within a few feet of the surface. This volume of water is great enough to fill any pit as fast as it can be excavated and to turn to treacherous quicksand soil that if dry and undisturbed would safely support heavily loaded foundations.

In similar wet soil, minus the flowing water, the foundations for the numerous column piers of the neighboring Municipal Building were sunk separately by the costly pneumatic caisson process which merely amounts to the use of diving bells, some of them carried down to rock and almost to the limits of human safety. This system, which has been adopted for most of the New York skyscrapers, also built in wet sand, was rejected for the court house



General View of Foundations Showing Partial Waterproofing of Lower Walls

Moran, Maurice & Proctor, Foundation Engineers

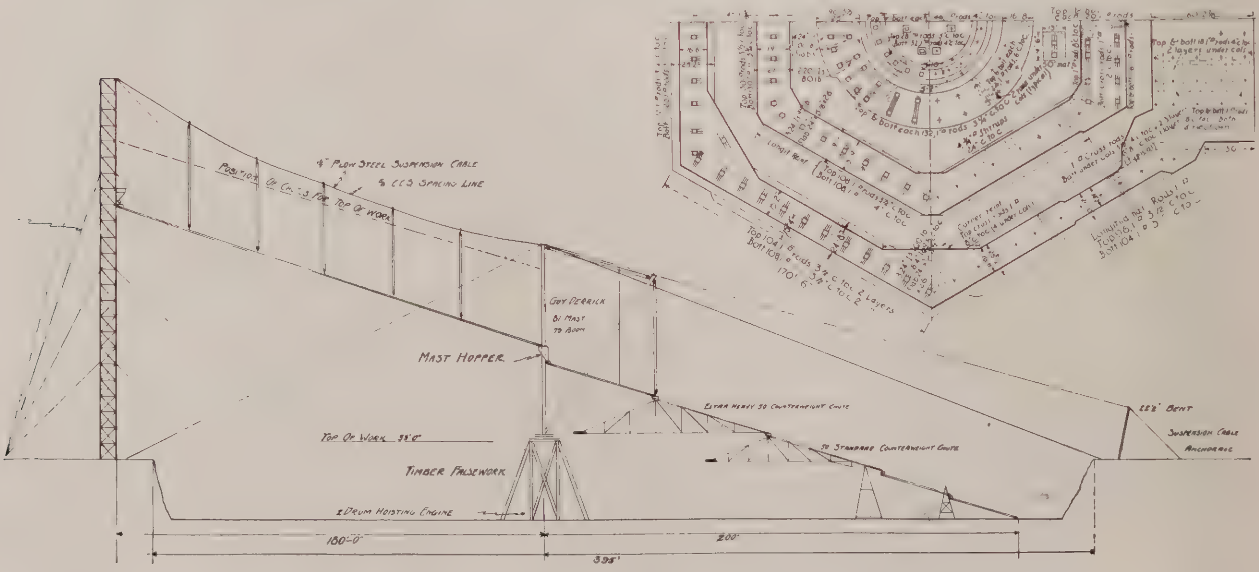


Vertical Reinforcing and Bonding Steel, Projecting above Foundation Rings
Excavation earth backfills between the rings

where a simpler and less costly construction was possible by arranging the principal walls and columns in parallel rows supported not as separate foundations on single piers but on a series of four huge concentric concrete rings, the inner circular and the outer hexagonal, that act like enormous curved girders and are so thick that they distribute their thousands of tons of load over very large surfaces without settlement on the wet sand. Each of these rings, about 20 feet deep and some of them 20 feet wide, contains, with the massive basement floor slabs that it supports, about 19,000 ordinary two-horse truck loads of concrete and is strengthened by about 2,500,000 pounds of steel bars embedded in it.

Excavating the Foundation Pit. Operations were commenced by the excavation of the necessary foundation pit, 500 feet long, 320 feet wide and 30 feet deep from which about 94,000 cubic yards of material were removed by a group of four powerful steam shovels gradually digging themselves down from the surface of the ground to the bottom of the pit, 10 feet below the water level. The first shovel scooped out, across the full length of the plot, a canal 30 feet wide that sloped rapidly from street level to an elevation 10 feet lower which formed the bottom of the first lift. Returning at the same level it doubled the width of the canal and gave an opportunity for the other shovels, working both ways from this canal, to excavate the remainder of the area down to the 10-foot level. Another canal was cut across the bottom of the pit, and from it the shovels worked both ways to extend the entire excavation to a depth of 20 feet, and once more dropped down nearly 10 feet farther on the center line and worked outward to the edges of the great pit with their heavy-toothed buckets, scraping up the sand, a wagon load at a time. The shovels, operated by two men each, excavated in about two months material that dug by hand would have required for removal 100 men working hard for four months.

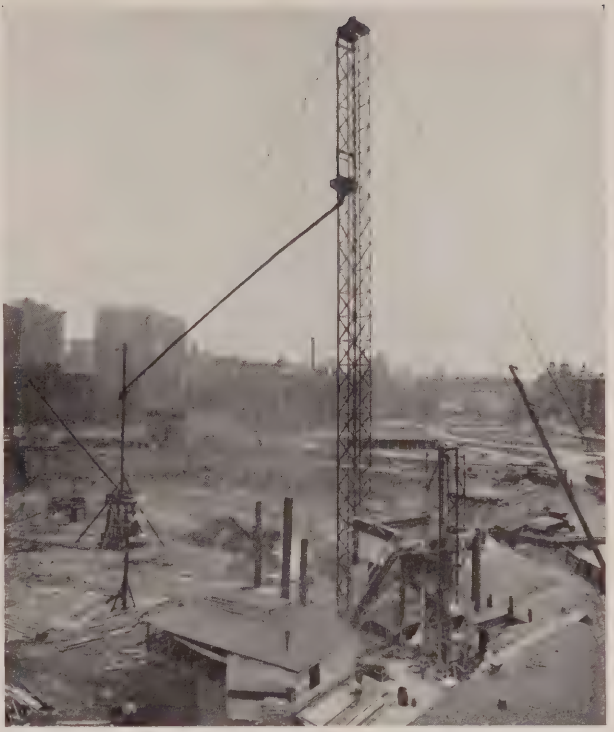
Draining and Pumping. When the shovels worked down to the second level they encountered there vast quantities of water flowing in from all sides and rising through the bottom so rapidly that it threatened to drive out the men and submerge the machinery besides making the bottom so soft and treacherous that it could not support the heavy machines or automobiles that were used. To remedy this a well, 18 feet square with sides lined by heavy wooden planks, was dug by a huge steel bucket operated under water by a derrick and hoisting engine. The well was carried down below the bottom of the final excavation and in it were installed the suctions, larger than stove pipes, of seven enormous pumps to remove the water even faster than it flowed in. This drained the soil surrounding the pit and rapidly



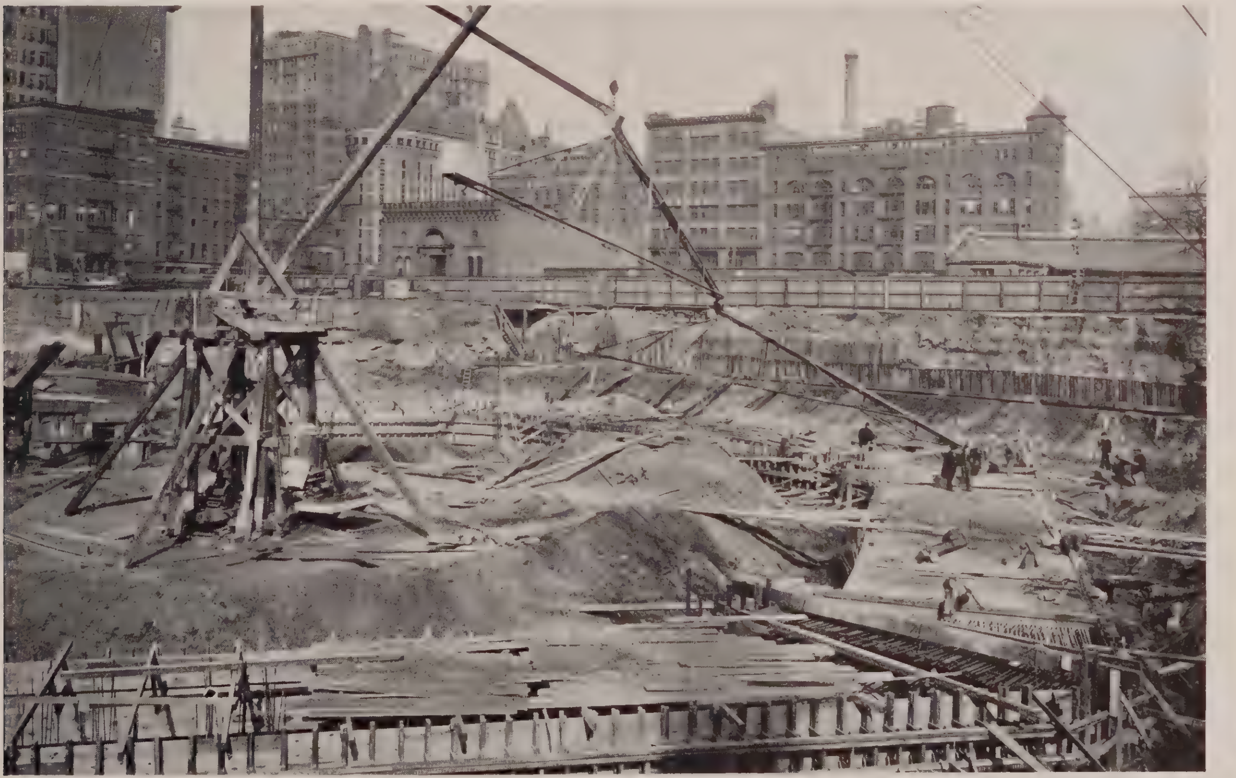
Elevation Diagram of Concrete Placing Plant and Half Foundation Key Plan dried out the bottom. Five of the great pumps, operated by electricity continuously, pumped as much as 4,000,000 gallons per day. The two remaining pumps, driven by steam, formed a reserve battery.

To collect the water in this pumping well there were continually maintained in the bottom of the pit numerous short and shallow trenches from the steam shovels to each of six large steel pipes radiating in different directions from the well and lowered as the excavation progressed until finally they were depressed below the finished bottom of the pit and served to drain this whole area while the foundations were being built and the earth filled back around them up to the basement floor, above ground water level.

Concreting Operations. Before the excavation was completed thousands of yards of concrete were placed in the foundation at the bottom of the crowded pit, and in order to carry on this work without interfering with the shovels, trucks and pumping and other operations and machinery in the pit itself, a system of costly and elaborate equipment was installed for the continuous mixing and delivery of the concrete. The cement in bags was hoisted by an elevator to the mixer, from which thoroughly mixed concrete was discharged every two minutes into a steel bucket and hoisted to the top of a steel tower 150 feet high. At the top of the tower the bucket automatically dumped its contents into a steel hopper and returned for another load. Through a gate at the bottom of the tower hopper an attendant regulated the flow of the plastic concrete into an inclined steel trough, suspended from an overhead cable. The concrete was thus delivered in an almost continuous stream to a second hopper that was supported nearly 100 feet above the bottom of the excavation by a huge derrick mounted on a tower in the center of the foundation pit. Passing



Concrete Mixing and Distributing Plant and Cement Storage Shed



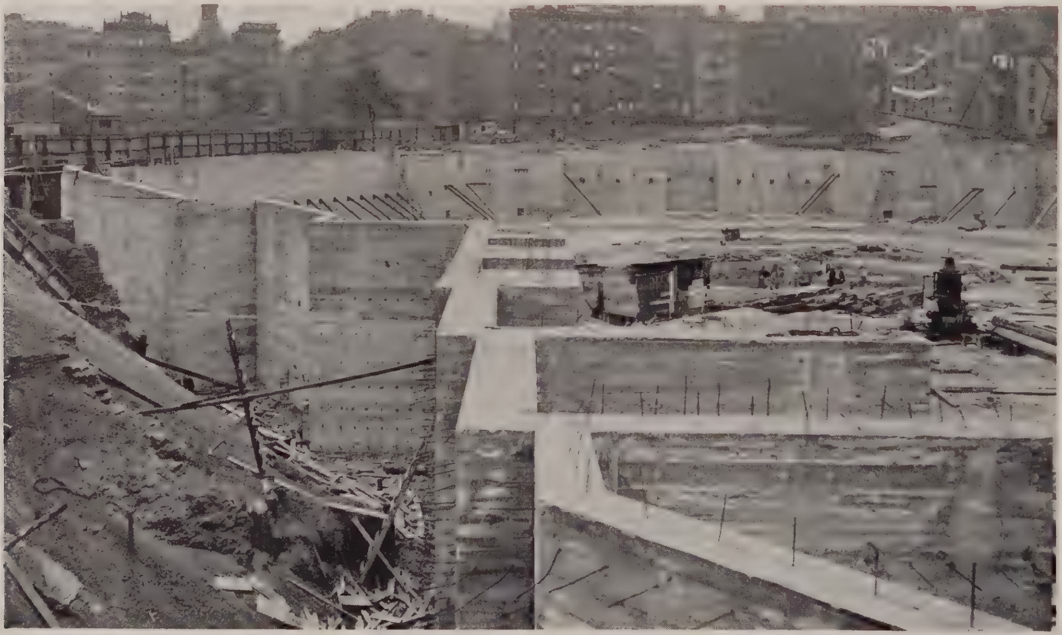
Spouting Concrete into Upper Part of Hexagonal Form with the Aid of Counterbalanced Chutes which May be Easily Handled by Two Men through the derrick hopper, the concrete continued flowing through a succession of steel troughs that passed through and were supported by the boom. As the boom could revolve horizontally in a complete circle about 120 feet in diameter, the concrete could be carried far above the heads of the workmen in the pit to a point within this area and there spouted down to exactly the required position in the foundation.

A second section of the trough, 50 feet long, was pivoted to the end of the derrick trough and supported on a heavily counterbalanced truss, thus enabling it to revolve around the end of the derrick boom while the latter was also revolving about the derrick mast and thus covering another distribution area 220 feet in diameter. Two more pivoted troughs attached to the end of the trough just mentioned made possible the concrete's being continually discharged down a long slope that could reach to any part of the foundation pit and be doubled on itself, extended at any angle, or revolved from different centers so as to cover every possible position and keep clear of all the men and machinery underneath.

Among the details that contributed to the economy, efficiency and rapidity of the work was the washing of the concrete machines, buckets, hoppers and the long steel troughs with a copious stream of water night and morning to prevent the concrete's hardening on the steel surface; otherwise it might have been necessary for men to be stationed on the lofty, swaying troughs to coax along the flow of the concrete. As the 114,000 bags in which the cement was received were worth 25 cents each when empty, care was taken to preserve them, and two men were constantly occupied in shaking them and pressing them into small bales, wired for transit to the mills. This forethought saved about $28,000 worth of cement and $28,000 worth of empty bags.

Placing the Concrete. The smooth, dense sand in the bottom of the pit was carefully leveled to form a regular surface on which there were built vertical wooden forms 15 or 20 feet apart and about as high, braced on the outside and tied together by many steel crossbars to prevent their spreading under the pressure of wet concrete. Hundreds of tons of long steel reinforcing bars were carefully bent, wired together, and supported a little above the bottoms and a little below the tops of the forms before the concrete was poured. To keep the reinforcing in position and prevent its displacement, when the concrete was poured, the rods were separated by small concrete cubes made by the contractor. On a wide wooden platform, resembling a huge pastry board, there was spread a thin layer of cement mortar. As soon as it began to stiffen, parallel lines were cut through it from top to bottom in both directions, dividing it into small squares like a checker board. After a few hours the mortar became sufficiently hard to be broken up on the lines already scored. In this way 8,000 of the little bricks or cubes were easily made every day.

After the complicated framework of steel bars was placed to make a sort of skeleton floor and roof in the form, the wet concrete was poured in an almost continuous stream, gradually progressing from end to end of each of the sections into which the great rings were divided for convenience of construction. After the removal of forms the work was completed by a man with an acetylene torch which burned off the ends of the tie rods projecting from the concrete much more quickly than could be done by saws or chisels, this being in accord with present practice.



Substructure Nearly Completed, with Tie Rods and Bonding Steel Projecting from Walls
The tie rods which braced the wood forms are burned off by acetylene torches

Plate Description

National Life Insurance Company Building, Montpelier, Vt. Plates 37–41. The completed structure will include a central pavilion with two extended wings, but one of which has been built. Exterior walls are faced with light colored granite from Vermont and gray brick, and the window trim has been painted a somewhat lighter gray than the materials of the walls. Composition has been used for roofing, and the interior finish, excepting in a few instances where special finishes have been used, is of enameled metal. For the assembly room a wood floor has been provided; in the executive offices the floors are carpeted, and for other parts of the building the floors are covered with linoleum.

Every part of the building is thoroughly ventilated by use of supply and exhaust fans, and heating is supplied by vacuum steam, in a combination of direct radiation with warmed air from supply fans. The cubic area of the part of the structure thus far completed is about 1,597,292 feet, and the cost has been approximately 88 4-5 cents per cubic foot; the contract was dated April 18, 1921.

General View of the Completed Building for the National Life Insurance Co., Montpelier, Vt.

First Parish Community House, Longmeadow, Mass. Plates 42, 43. While constituting part of a church's equipment, this building, of which Smith & Bassette are architects, serves many of the purposes of a village community center. The floor plans show it to be unusually complete, for in addition to an auditorium with stage and galleries there are smaller meeting rooms, various offices, dining room and kitchen, in fact every detail of equipment likely to render such a building useful. Views of the exterior show an interesting use of the colonial style. Brick is used for building the enclosing walls, but to add a note of variety the facade under the portico is stuccoed over the brick.

Daily News Sanitarium. Lincoln Park, Chicago. Plate 44. For more than 30 years the *Chicago Daily News* has been instrumental in maintaining a sanitarium for babies whose parents live in the crowded districts of Chicago, in what are popularly known as the "river wards," the children and their mothers being conveyed to and from the sanitarium in busses. During many years the sanitarium occupied a large frame shelter on the shore line of Lake Michigan, but recent enlargements of the park have made what was once the shore line far inland. This, together with the fact that the old structure was badly out of repair, led to the building of a new sanitarium at the present shore line and erected under the personal direction of Victor Lawson, owner of the *Daily News*.

The new structure, planned by Perkins, Fellows & Hamilton, is both fireproof and weatherproof. Roofs are of tile, piers of rough-surfaced vitrified brick, floors are of thick reinforced concrete slabs with waterproof surface, everything being built with a view to cleanliness and durability. The upper floor of the west projecting wing contains a well equipped hospital where emergency or serious cases can be treated, and which is also used for other purposes when stormy weather renders impossible the use of the pavilion proper. The sanitarium was opened early in 1921 and cost approximately $275,000.

House of Dr. Samuel Milbank, 117 East 65th Street, New York. Plates 45, 46. The charm of the exterior of this city house is due to the excellent planning of the facade and the care with which the detail has been designed. Brick is the material with which it is faced, the color and texture of the brick being emphasized by the white of the trim and the black of the wrought iron balcony.

Since the house is intended as the offices as well as the home of a physician, the hall of the ground floor is used as a patients' waiting room; beyond is the office proper, and still beyond the office and occupying the extension is the utility room which a physician's work requires.

House of Harvey D. Gibson, Esq., 52 East 69th Street, New York. Plates 47, 48. This residence, of which Walker & Gillette are the architects, is an excellent example of a modern city house in the Adam style. The facade of the lower floor is faced with stone, and stone is also used for the exterior trim, the walls above the ground floor being faced with old English brick. To remedy the apparent height of a 5-story building of narrow width the upper floor has been recessed behind a brick and stone coping, the low mansard roof being covered with old slate.

Ornament about the main entrance, which in this instance is at the sidewalk level, has been given a restrained Adam treatment, and the front door is painted bright green. The consistent Adam design of the exterior has been maintained throughout, the interior walls being painted the light colors often used in late eighteenth century English houses, affording good contrast with well detailed woodwork.

EDITORIAL COMMENT

A WORD FOR COMPETITIONS

WITH each succeeding competition of large scope, attracting many entrants, it is but natural for architects to look upon the cost to them in the venture and for many to reach the conclusion that the time, effort and money expended in designing a building and presenting it by imposing exhibition drawings are an economic waste. The recent *Tribune* competition, which is outstanding in scale in several respects when past competitions are recalled, serves to raise anew discussion of competitions.

The aggregate cost to architects of assembling the drawings for the consideration of *The Tribune's* jury has been estimated as high as half a million dollars. If this much money must be expended to enable an important business concern to select an architect or a design for a building even to cost seven millions of dollars, there is something frightfully wrong with the system and every means should be taken to abolish it. There are, however, some important results to be considered on the credit side, and *The Tribune* competition indicates the possible value of these results to a greater degree than almost any other competition within memory. If the great, underlying lesson of this competition is grasped by architects, its cost of half a million dollars will be as nothing to the benefits to come to architecture.

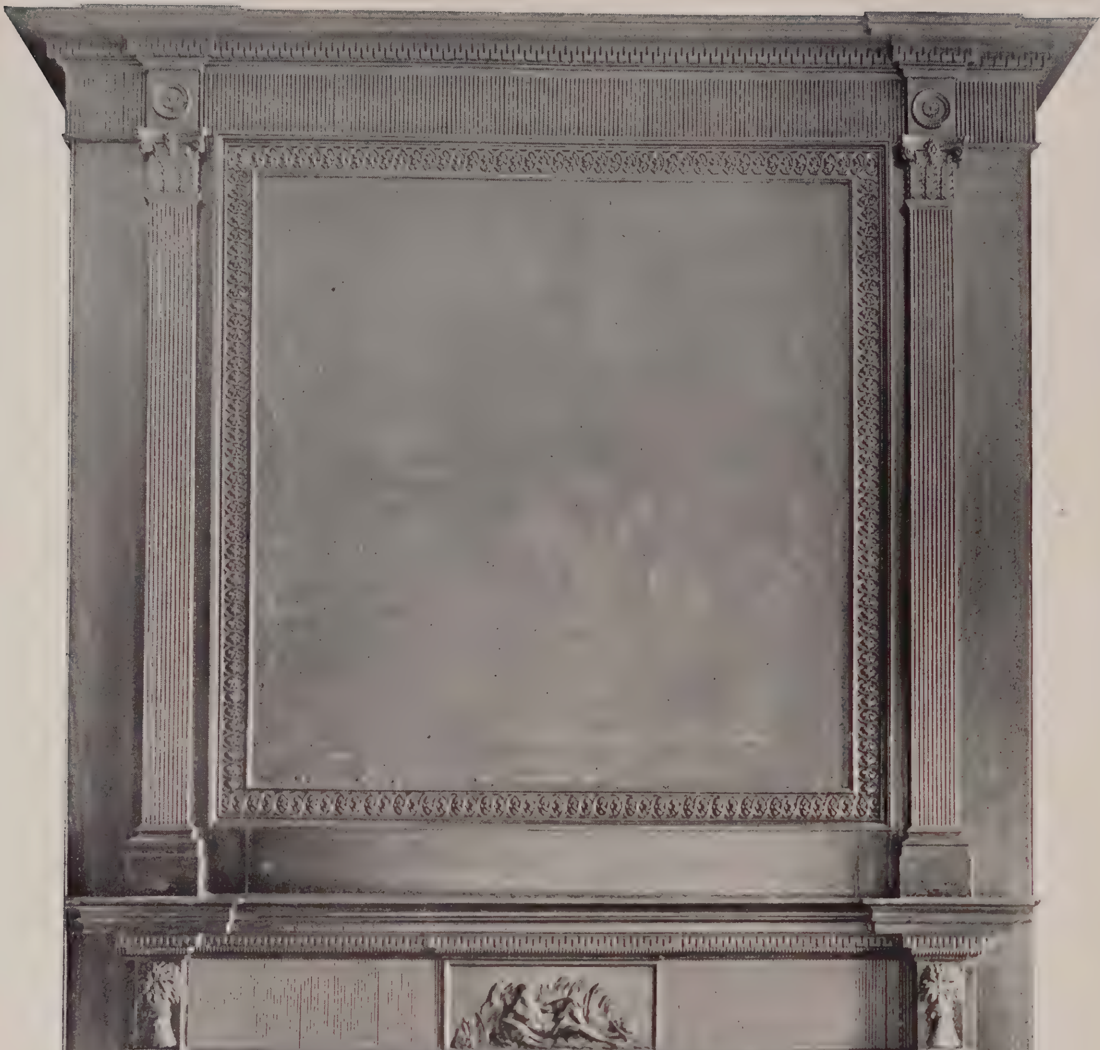
It comes on the architectural horizon as a rift in the clouds, letting in a beam of light that pierces a shadow which has enshrouded the greater part of modern architectural effort. The critical examination of the results gives opportunity for pause in our architectural humdrum; it leads us to reflect and meditate on our course, and that alone is a circumstance of priceless value. Only in moments of meditation do great fundamental truths reveal themselves. We have been living in an architectural age in America in which the forms of the great architectural expressions of all past eras are spread before us; we have been attracted first by one and then by another, and we have studied their external manifestations until we are thoroughly familiar with all the subtleties of detail and proportion; we have become the greatest exponents and practitioners of eclecticism in the whole realm of architectural history. But in this seeking for perfection in the old manners of building we have lost the spirit of architecture,—the true meaning of building as an art. We have assumed that all the songs have been sung, that all individual, creative effort has been expended, and that modern architecture is simply an expression of good taste in applying precedents.

The Tribune competition is an open book for all to read who will; it plainly marks the folly of our present conception of architecture. The tall commercial structure of our cities is wholly an American manifestation, a product of the conditions of our own day. Its necessity has evolved the marvelously efficient modern steel construction, but it has not sufficiently moved architects to find a correspondingly appropriate means of expressing it in suitable and meaning architectural forms. One very probable reason is that the great styles of building of past centuries have grown step by step with advanced knowledge of construction methods. Today structure and architecture are unfortunately divorced; the structural engineer provides the bones and sinews of the building, and the architect produces an envelope, pleasing to look at sometimes, but arranged in Greek, Roman, Gothic, renaissance or any other garb he may choose—all without any real relation to the structure which supports it. It is entirely reasonable that today with the vast increase in the complexity of building, specialization should exist, that the engineer should be responsible for structural methods and that the architect should concern himself with the visible covering of the building, but they should work in harmony and with a full understanding of each other's function—not, as too frequently happens today, at cross purposes, each looking to diametrically opposite ideals.

This real relation can be brought about in modern architecture, but the burden of its achievement lies largely with the architect; the engineer is able to produce his results because he is not enslaved by precedent and because he is required to do original thinking, whereas the architect is so fettered and bound by the continued associations from early student days with past forms that attempts at thought are more apt to result only in confusion. The ignorant man, however gifted, cannot of course create an architectural masterpiece; all must know the rules of architectural development which will prevent them from committing gross errors, but beyond this precedent should not bind them; true architecture can be produced only by intelligent thought. Real thinking is the important element lacking in our architectural efforts; it is the important element that our architectural schools have overlooked inculcating in the mind of the student. It is the outstanding necessity for a successful American architecture, and if occasional competitions will help us to analyze our efforts, to develop a faculty of thinking out our problems, they will well serve the architectural profession and their cost will not be considered in the greater sense of satisfaction that architects will find in their work and in the enthusiasm that the public will feel for an art that is clearly a part of its very life.

DECORATION *and* FURNITURE

A DEPARTMENT
DEVOTED TO THE VARIED
PROFESSIONAL & DESIGN INTERESTS
WITH SPECIAL REFERENCE TO
AVAILABLE MATERIALS



CHIMNEYPIECE IN NORTHWEST PARLOR, DERBY-ROGERS HOUSE, PEABODY, MASS.

SAMUEL McINTIRE, ARCHITECT, *circa* 1800

Now in the Museum of Fine Arts, Boston

The Architectural Forum

American Interiors of the Early Republican Period

WOODWORK AND FURNITURE OF THE DERBY-ROGERS HOUSE AT THE MUSEUM OF FINE ARTS, BOSTON

By EDWIN J. HIPKISS
Keeper, Department of Western Art, Museum of Fine Arts, Boston

ALTHOUGH American and English domestic architecture of the eighteenth century were branches of the same growth, each was expressive of its own people, and that American master builders used European books on design as source books and not as copy books seems evident through study.

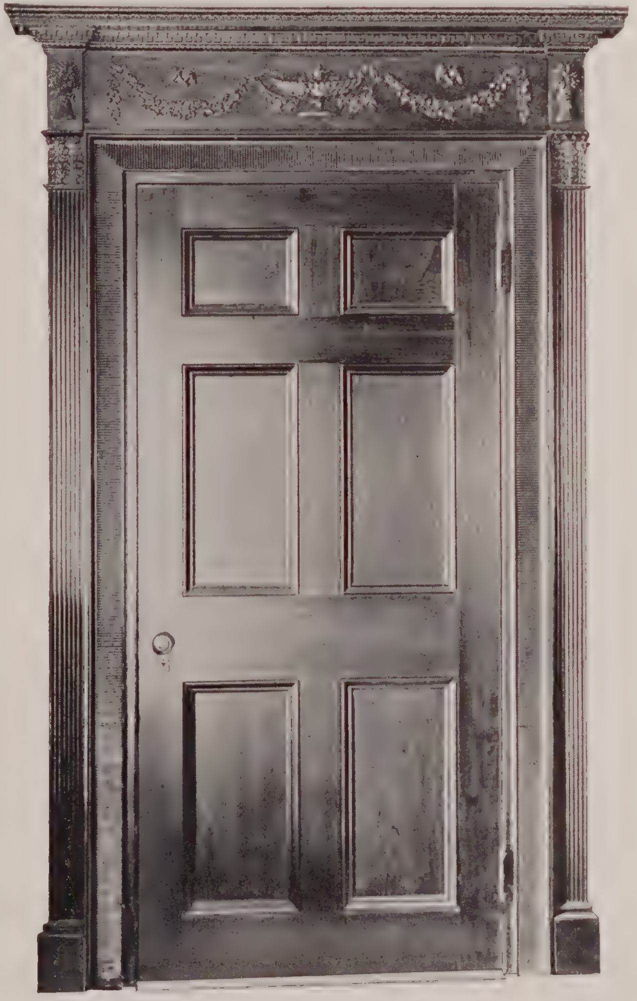
This is much less true of late work, and houses of the first few decades of the republic show use of distinct mannerisms of the Adam brothers, due undoubtedly to the thoroughness with which their work was published within their lifetimes and to the adoption of their style by their contemporaries.

The Derby-Rogers house at Peabody, Massachusetts, was in its prime one of the finest examples of the architecture and furnishings of the early republican period in New England. The house stands on a knoll in a large estate between Danvers and Peabody, known for a century or more as "Oak Hill." Samuel McIntire of Salem was the architect of the building and it was erected during 1800 and 1801 for Elizabeth Derby, the eldest daughter of Elias Haskett Derby, merchant, of Salem. In 1870 the house was rebuilt in part, the three chief rooms with their woodwork alone retaining the architectural value given them by McIntire. Parts of the house show also minor details in an earlier manner and probably remain from a house of the eighteenth century on the same site.

The house has long received the attention of architects. The detail is often ranked in importance with the woodwork made by McIntire for the Elias Haskett Derby mansion in Salem and placed in the Cook-Oliver house in 1803 after Mr. Derby's death. The mantel in the northeast parlor has been especially praised for its fine proportions and restrained treatment at a time when the use of applied ornament was common.

The entire woodwork of the three rooms with a few other details has now been purchased by the Museum of Fine Arts, Boston. The purchase is in accordance with the policy of the trustees in acquiring architectural detail only when the buildings it adorns await remodeling or removal.

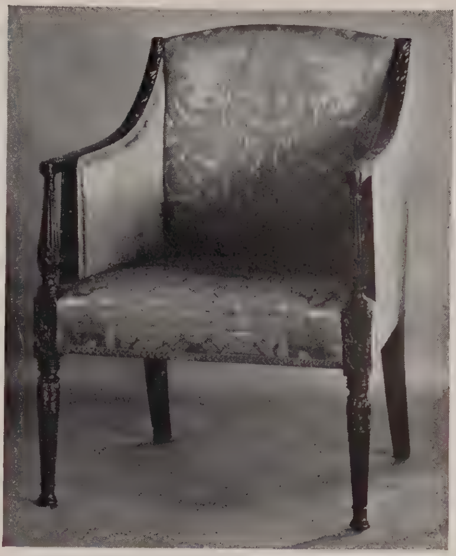
The two principal mantels have panels painted in oil, representing village scenes called "Saturday Night" and "Sunday Morning." These are the work of the painter Corné. He is thus mentioned in William Bentley's diary for the year 1801: "Mr Corne of Naples, an Italian Painter in the Town, introduced by Mr. Derby, rode with me to the estate of Governor Endicott, to see whether he could preserve a likeness from the family picture of that venerable Puritan." They are now much darkened.



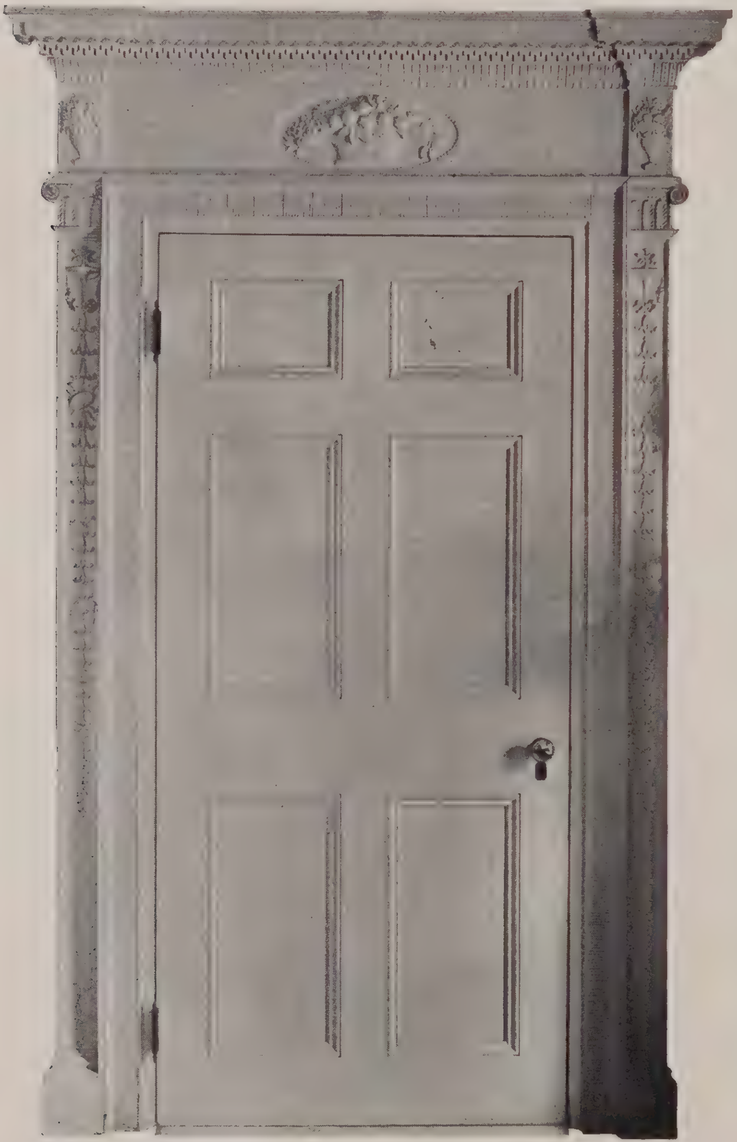
Doorway from Northwest Parlor
The door is modern and quite out of scale with its McIntire frame

The scale of these rooms may be indicated by some dimensions. The southeast parlor is approximately 19 feet by 25 feet, 6 inches, with a height of 10 feet, 8 inches. The northwest parlor is approximately 16 by 20 feet. We have no evidence to show how the walls were treated originally, but it seems probable that wall paper with either a damask pattern or some Adam design was used. Mr. Bentley visited the house in 1801 and noted in his diary, "the paper and linen hangings were superb." The woodwork is of pine painted white, but the northwest parlor at some time later, perhaps in 'the 70s, was skillfully "grained" and came forth as walnut! The original white paint can be uncovered. The ornamental elements are not carved,—this was a period of "putting on style." The capitals, patera, ornamental bands and designs of *plenty and grace* were all stock patterns of French putty, probably sent over from a London stock such as pushing trade would favor over the honest carving McIntire could do. The ceilings are all plain, although it seems that the conditions and influences should have produced a ceiling decorated in the Adam manner. That was a feature not adopted by New England as far as we know.

The linings and hearths of the fireplaces are of soapstone. The facings are of white marble in two rooms with black marble in a third. In the southeast parlor the facing, decorated with a fret design, was probably put in later than the original work. It may have been added by Samuel F. McIntire, the son, who did some additional work at "Oak Hill," and who made out a bill, dated January 6, 1814, which is now in the possession of the Museum of Fine Arts.



Sheraton Mahogany Armchair
Part of original furnishings

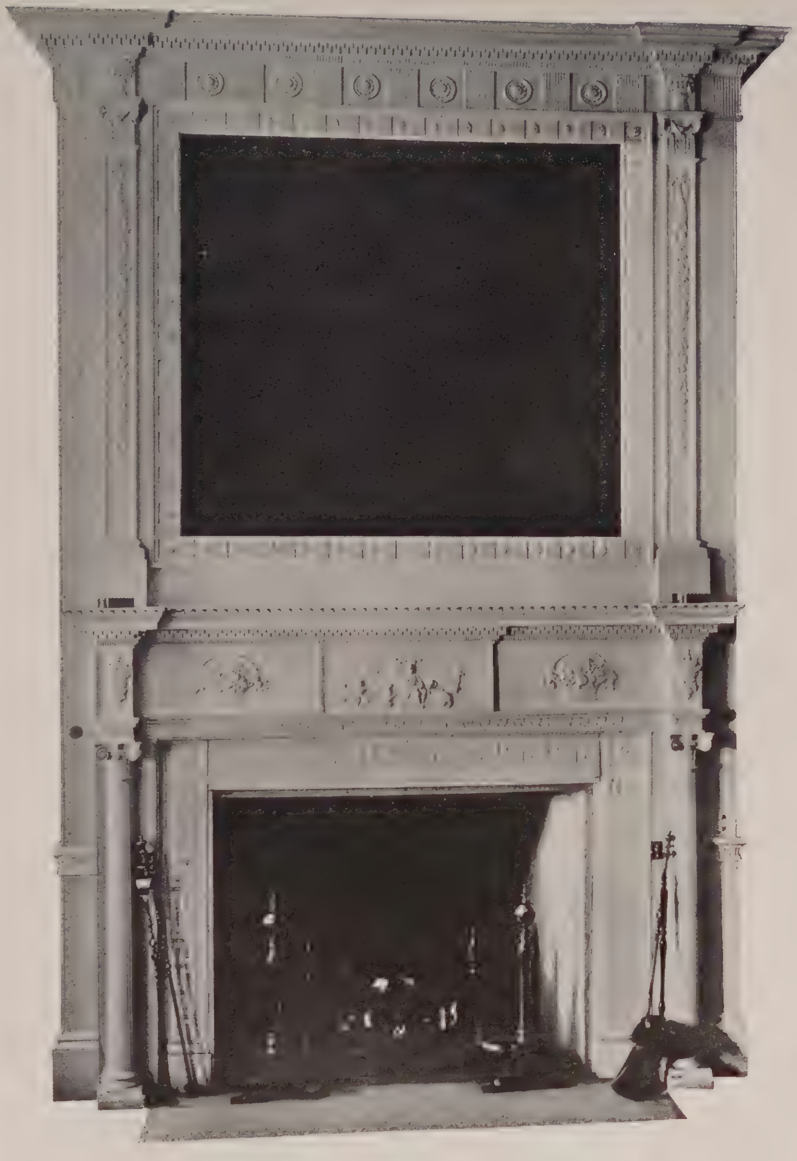


Interior Doorway with Frame in Adam Manner
The door and its hardware are modern

A generous gift which supplements this purchase includes fine furniture, window cornices and fire tools which were part of the original furnishings of these rooms and had become the property of the donor by inheritance. When the rooms are eventually set up in the museum, they will provide with their related objects a fine setting of decorative arts used in New England at this period.

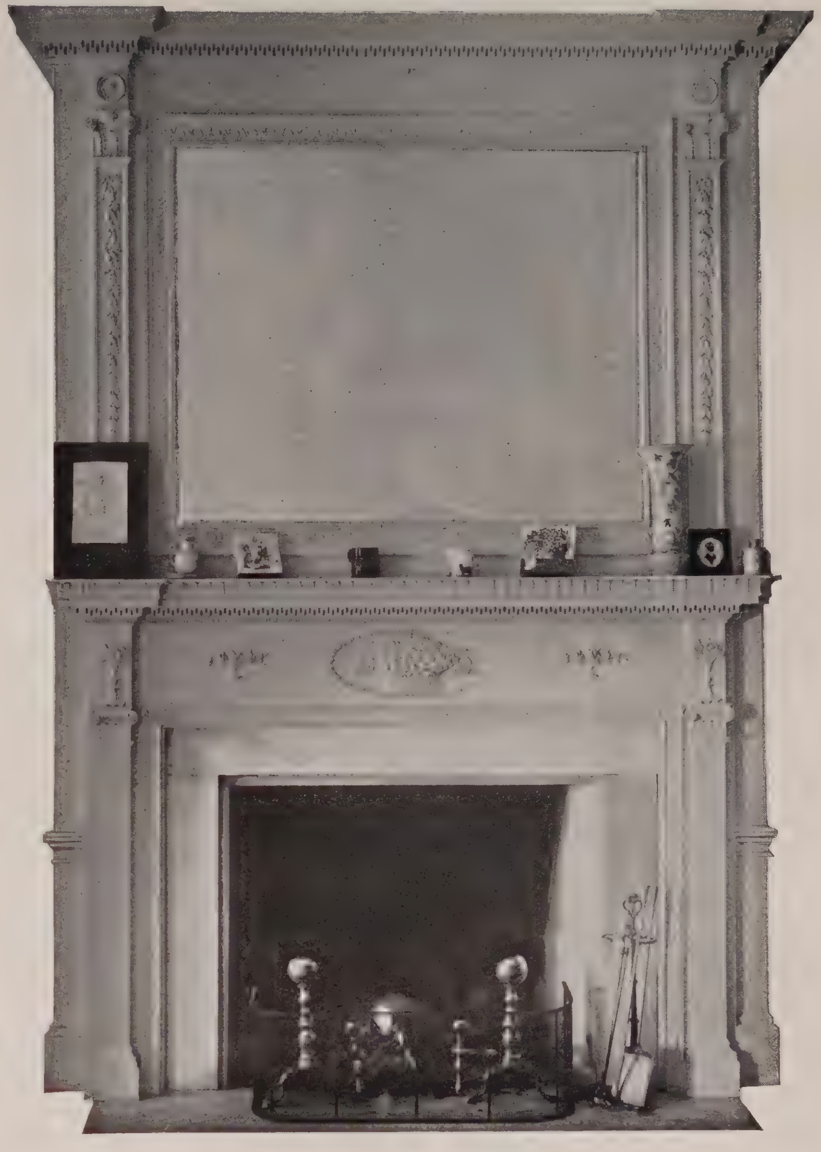
The furniture, however, is not by native cabinet makers. It was imported from England with, very likely, considerable pride in the ownership of London pieces in a fashionable house. The side chairs in the style of Hepplewhite, shown in the illustrations, are each representative of a set. That with the elliptical back is of beech, painted in vermilion and gilt. The splat design is, of course, due to the popularity of the Prince of Wales, thus his insignia in a chairback. The other is of mahogany, finely carved. They both were made about 1785. Mahogany is the material of both the Sheraton armchair and the fine Adam card table which is one of a pair. The textile coverings are not original; they were probably of damask with a pattern in finer scale. With its skillfully made joinery, inlaying, carving and pleasing lines, the card table well represents its kind and period—the last quarter of the eighteenth century, under the influence of Robert Adam.

The Essex Institute of Salem has published the diary of William Bentley, D.D., and on page 399 of Volume III there is an interesting reference to the furnishings of the Derby-Rogers house as Mr. Bentley saw them in 1801: "Through the great pasture we passed to the house erected by Mr. West, and executed in the taste and under the direction of his wife, the eldest daughter of the late Elias Haskett Derby. Its front eastward commands a most extensive prospect. The house in front is of two stories with four equal rooms. The apartments are finished in as good order as any I have ever seen. The furniture was rich but never violated the chastity of correct taste. The family of Esq. Collins



CHIMNEYPIECE IN SOUTHEAST PARLOR

The marble facing is of later date than the woodwork



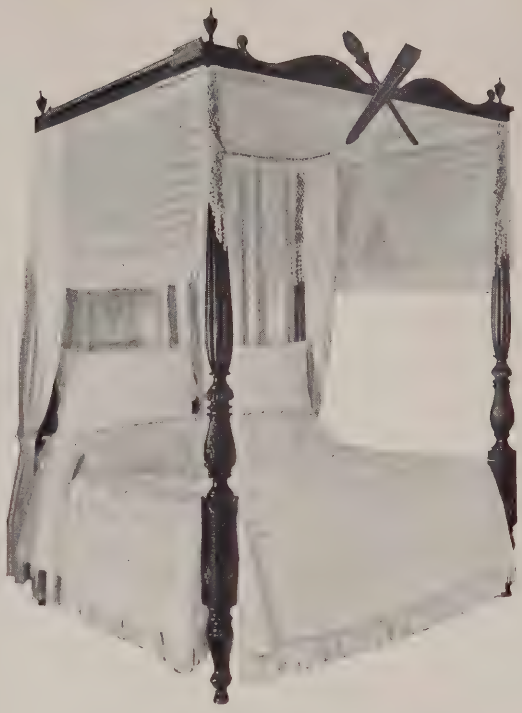
CHIMNEYPIECE IN NORTHEAST PARLOR

In recent years a mirror has replaced painting originally in overmantel

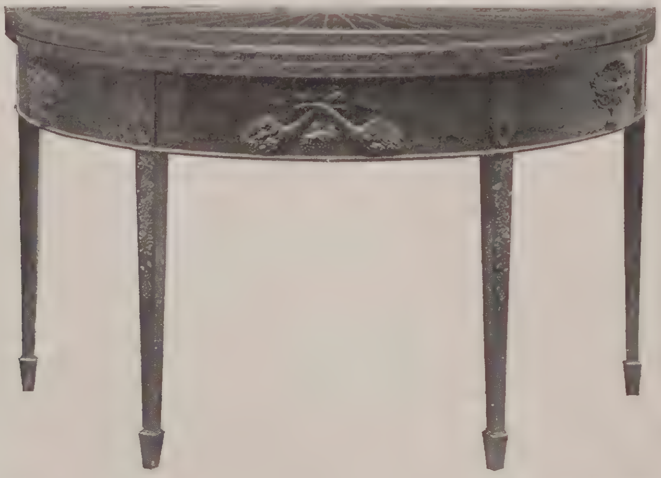
CHIMNEYPIECES FROM THE DERBY-ROGERS HOUSE, PEABODY, MASS.

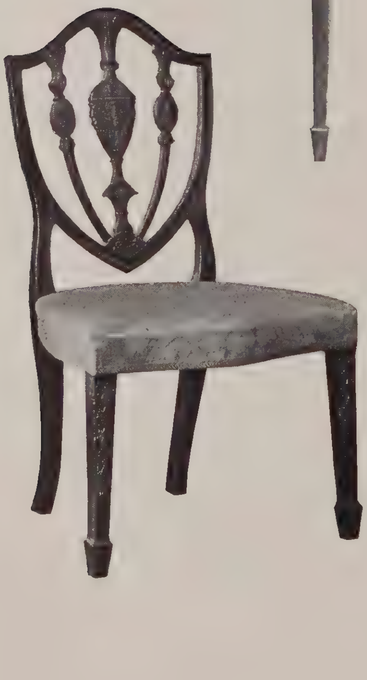
joined us to enjoy the rich beauties which multiplied around us. The pictures were excellent. The paper and linen hangings were superb. The movable furniture, rich and uniform, but simple. The mirrors were large and gave a full view of everyone that passed, and were intended for the house in town but were exchanged as those for this seat were too large. The markee bed was preferred to the full bed for its simplicity. It was surmounted by a golden eagle. The work of the room was finished by the needle of Mrs. West."

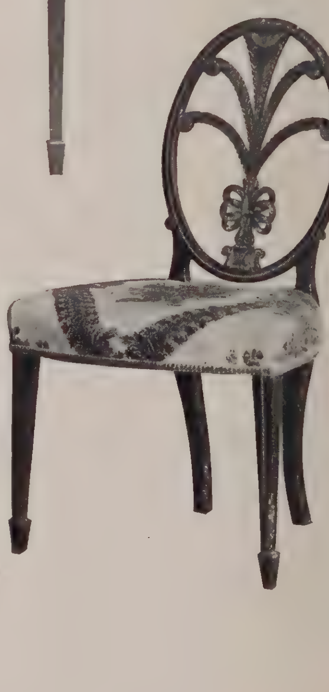
Samuel McIntire was born in Salem in the year 1757 and died there in 1811. His life and works centered in his native city, and although the practice of his art was restricted within a somewhat narrow compass he attained outstanding distinction in his time and left an achievement in works now studied with interest. He belonged to the eighteenth century, and his last work, the fine Gardner-White-Pingree house, built in 1810, marks the end of an epoch in style and the on-coming of architectural revivals. The Greek temple with its portly wooden order became thereafter the ideal in all our cities and towns and was succeeded by so-called Gothic mansions, Italian villas and Swiss chalets. McIntire's work, while executed under the influence of the Adam style, has local and even individual quality. His designs have their imperfections in which criticism easily finds its target. But his achievement, based on actual contact with building materials and his ability to hold to a sense of style through the maze of the workshop at a period when knowledge of architectural design depended upon personal aptitude and the study of a few scarce books, can only ask for our warm appreciation. He was what must always be valued by us in the end—a master workman. His work has enjoyed its share of influence in forming the taste of a later generation of architects.



Canopy Bed, Part of Original Furnishings







THERE are illustrated here three pieces of furniture comprising part of the original furnishings of the Derby-Rogers house. They are of English make and examples of fine craftsmanship. The table is one of a pair of card tables with an inlaid top in fanlight pattern. The chair at the right has no carving, the effect of relief being given by painting in black and gilt on a vermilion ground.

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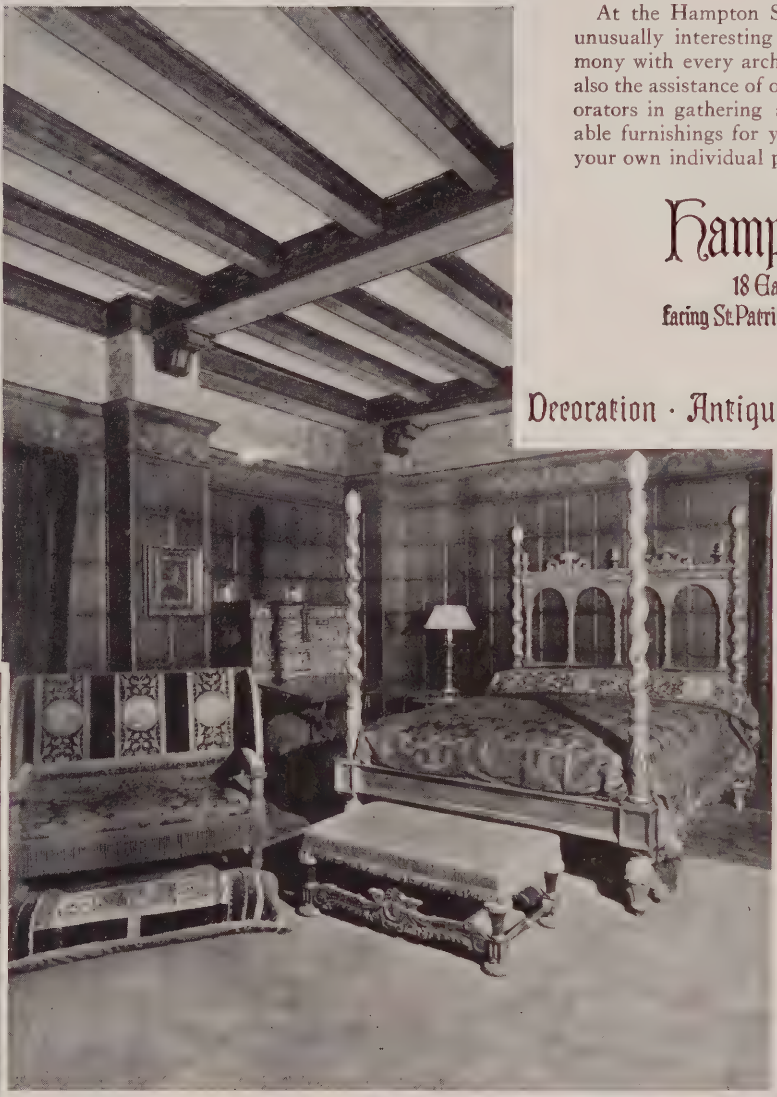

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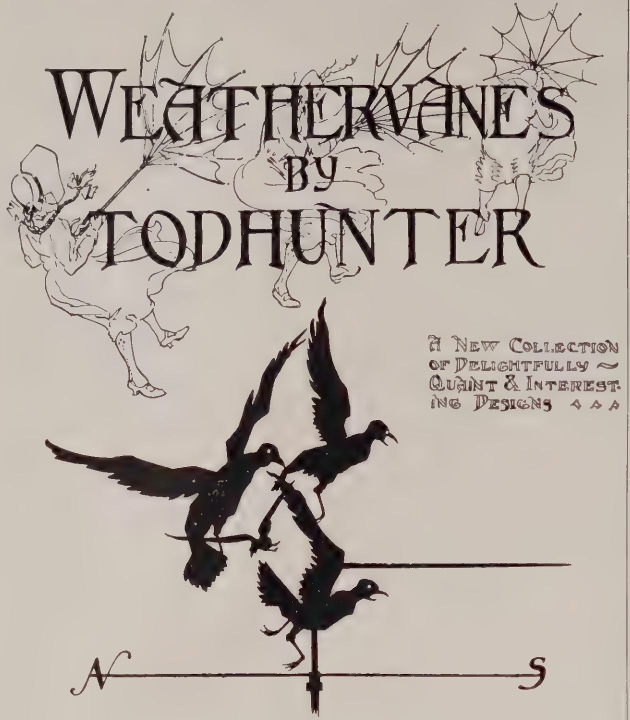
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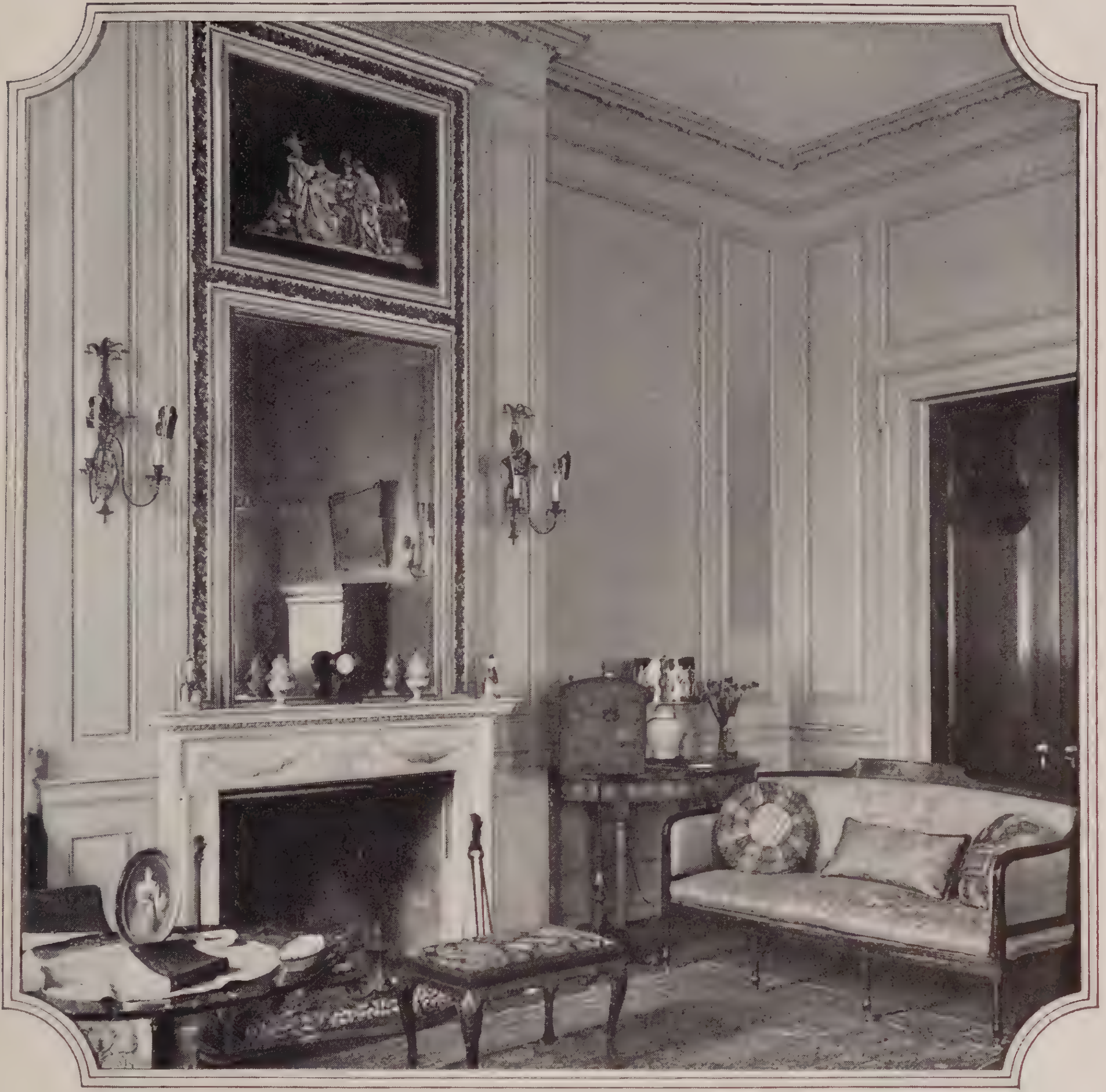

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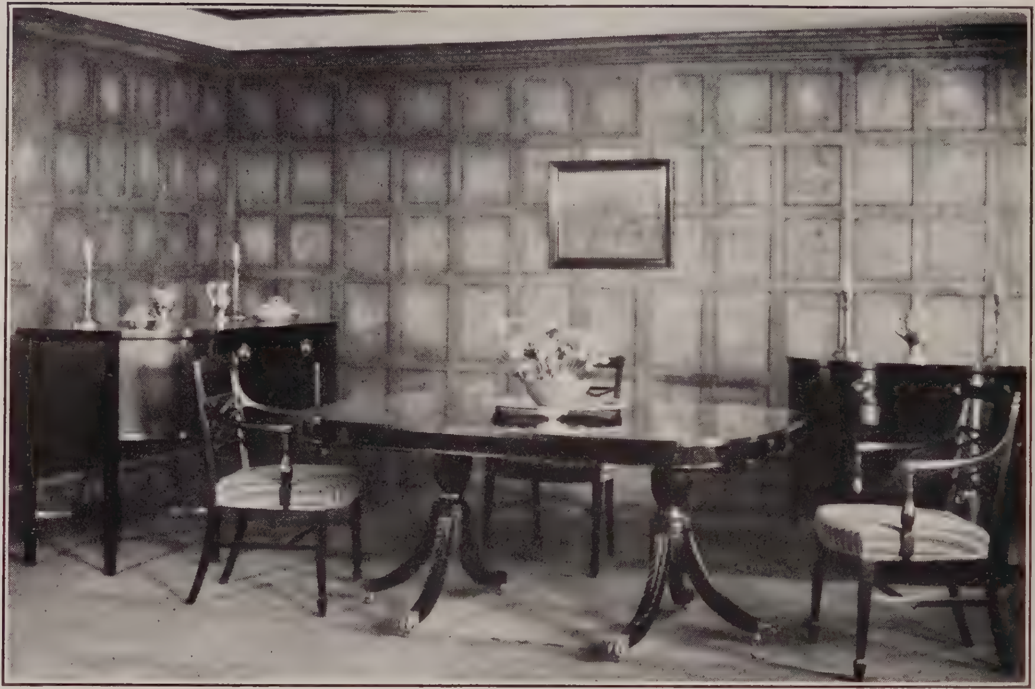

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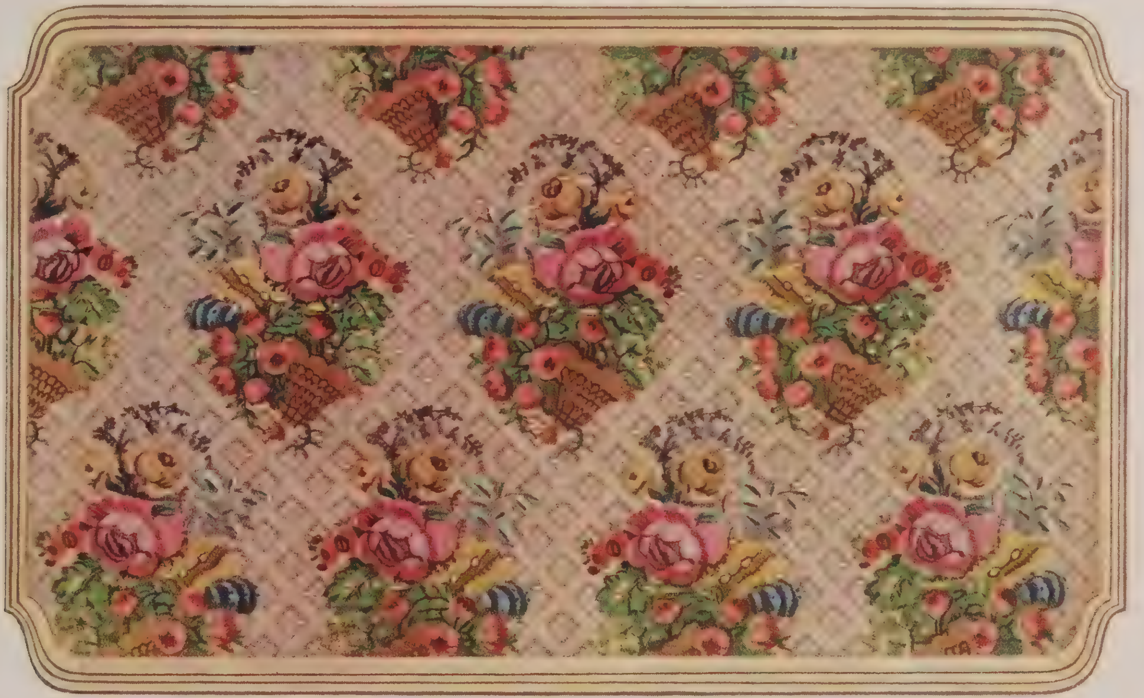

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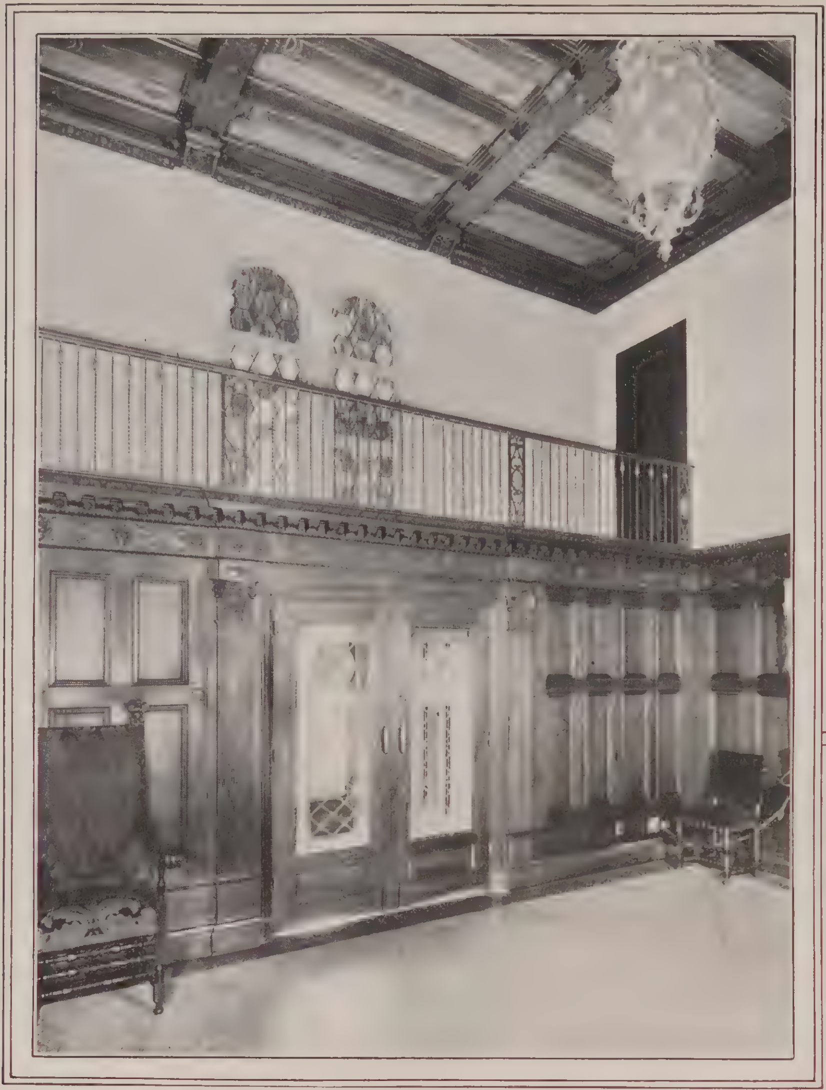

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Ackerman Galleries, 10 East 46th St.—Water colors of London by Barry Pittar, through April.

Arlington Galleries, 274 Madison Ave.—American and French panels and etchings by Elisha Kent Kane Wetherill, through April.

Beecher Memorial Gallery, Plymouth Institute, Orange and Hicks St., Brooklyn—Loan collection of paintings after Nattier, and the "Home Beautiful" lent by John Wanamaker, to April 30.

Beimaison Gallery, John Wanamaker's—Paintings by the younger French artists, to April 18.

Bonaventure Gallery, 536 Madison Ave.—Early American portraits.

Brooklyn Museum, Eastern Parkway—European paintings; Tissot water colors; American paintings; 100 pictures of ancient Egyptian life.

FitzRoy Carrington, 707 Fifth Ave.—Engravings and woodcuts by Durer; "Some Masters of Lithography."

Dudensing Galleries, 45 West 44th St.—Paintings by Raphael Sala.

Durand-Ruel Galleries, 12 East 57th St.—A painting by Paul Gauguin; the water-lily paintings of Monet.

Mrs. Ehrich's Gallery, 707 Fifth Ave.—Exhibition of metal work, linens, Cantagalli glass and antique furniture.

Fearon Galleries, 25 West 54th St.—Paintings by Raeburn, Gainsborough, Cotes and Reynolds.

Ferargil Galleries, 607 Fifth Ave.—A group of portraits of women and children.

Folsom Galleries, 104 West 57th St.—Paintings by Blakelock, Twachtman, Inness, Wyant and Keith.

Grand Central Galleries, 6th floor, Grand Central Terminal—Opening exhibition of American painting and sculpture.

Harlow Gallery, 712 Fifth Ave.—Etchings by Zorn and paintings by Carl Rungius.

Keppel Galleries, 4 East 39th St.—Etchings by Forain, beginning April 3.

Kingore Galleries, 668 Fifth Ave.—Portraits by Edmund Pizzella, beginning April 4.

(*Continued on page 52*)

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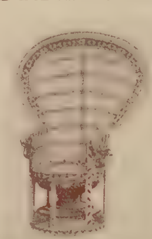

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NEW YORK EXHIBITION CALENDAR
FOR LATTER PART OF APRIL

(*Continued from page 51*)

Knoedler Galleries, 556 Fifth Ave.—Etchings and drypoints by D. Y. Cameron, through April.

John Levy Galleries, 559 Fifth Ave.—American and foreign paintings.

Lewis & Simmons, 612 Fifth Ave.—Old masters and Barbizon paintings.

Lowenbein Gallery, 57 East 59th St.—Permanent exhibition of small paintings by American artists.

Metropolitan Museum, Central Park at 82nd St.—Loan exhibition of Chinese paintings; loan exhibition of old English ship models; loan exhibition of sculpture by Degas; landscapes by Hokusai, Kuniyoshi, Gakutei, etc.

Milch Galleries, 108 West 57th St.—Paintings by Bruce Crane, April 2-21; portrait drawings in silverpoint and sanguine by Ercole Cartotto, April 2-21.

Montclair Museum, Montclair, N. J.—Lithographs by Bolton Brown.

Mussmann Gallery, 144 West 57th St.—Etchings by American artists.

National Arts Club, 119 East 19th St.—Paintings by Patterson, Derrick, Lever, Gruppe and Dabo.

The New Gallery, 600 Madison Ave.—Paintings by Boris Grigorieff, April 6-28.

N. Y. Public Library, Fifth Ave. and 42nd St.—Etchings by Whistler; "Making of a Japanese Print."

Ralston Galleries, 4 East 46th St.—XVIII century English portraits and Barbizon paintings.

Rehn Gallery, 6 West 50th St.—Paintings by Twachtman, Weir, Dewing, Hassam and others.

Reinhardt Galleries, 606 Fifth Ave.—Ancient Indian and Graeco-Buddhist sculpture.

Schwartz Gallery, 14 East 46th St.—Exhibition of modern etchings.

Scott & Fowles Galleries, 667 Fifth Ave.—Early English portraits, Barbizon and American paintings.

Société Anonyme, 19 East 47th St.—Paintings by Kandinsky, through April.

Mrs. Sterner's Gallery, 22 West 49th St.—Water colors by Eleanor W. Motley, mural decorations and paintings by Gardner Hale, beginning April 7.

Arthur Tooth & Sons, 709 Fifth Ave.—Exhibition of Barbizon paintings.

Weyhe Galleries, 710 Lexington Ave.—Drawings and lithographs by Alfred Dehn, to April 25.

Whitney Studio, 8 West 8th St.—Annual exhibition by members of the Whitney Studio Club, beginning April 3.

Wiener Werkstaette of America, 581 Fifth Ave.—Exhibition of Viennese art.

Wildenstein Galleries, 647 Fifth Ave.—Paintings by Nan Watson; portraits by Micheline Resco.

Howard Young Galleries, 620 Fifth Ave.—Exhibition of American and foreign paintings.

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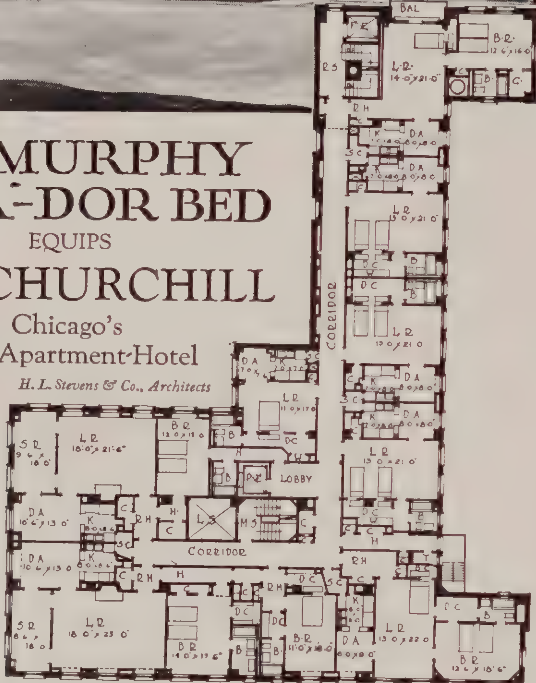

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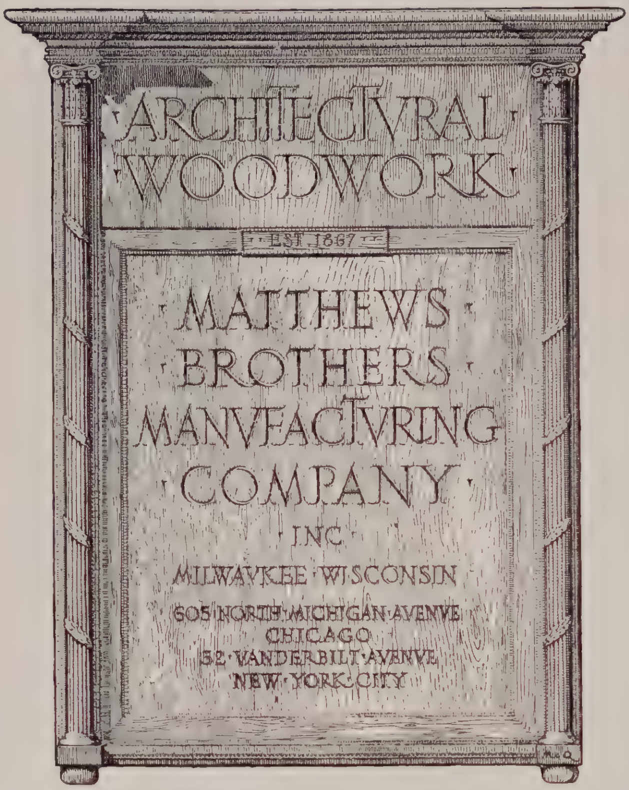

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SERVICE SECTION
of THE ARCHITECTURAL FORUM

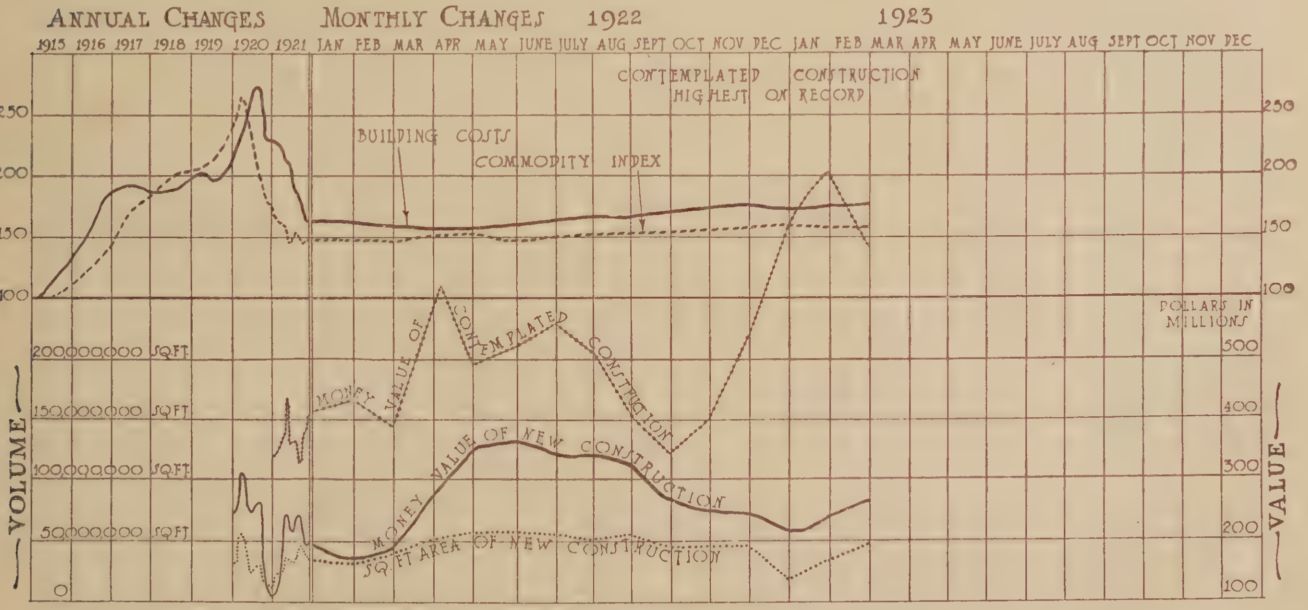
Information on economic aspects of construction and direct service for architects on subjects allied to building, through members of THE FORUM Consultation Committee

The Building Situation

As the spring building season officially opens all eyes are turned with great interest on the behavior of the material and labor markets. From all available reports it is evident that the buying commitments for materials during the first three months of 1923 are approximately one-third greater than known in any similar period of building history. This means that manufacturers are called upon for approximately a 40 per cent increase in production, and under these conditions it is evident that prices are fairly well stabilized where production facilities exist, such as with common brick, cement and architectural terra cotta, while in other lines, including plumbing supplies, glass and special products, the market as noted is one of price increases.

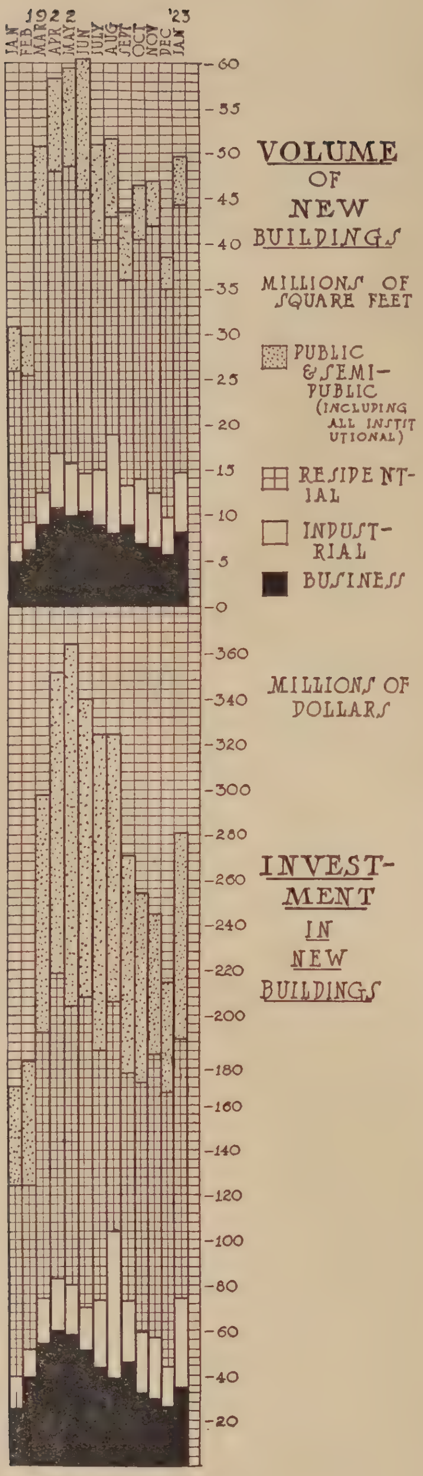
The spirit of buying is stronger than ever before. We have previously reported that all indications point to 1923 as the greatest year in building history, and this activity can only be offset by one condition,—the discouragement of the buying market by prohibitive price increases. While it is true that these conditions have created a market which may be taken advantage of by manufacturers, it is also true that there is very little indication of such shortsightedness and that the established policy of manufacturers in the building field is to co-operate with buyers. Labor, as always, is subject to the basic control of supply and demand. In several of the trades, such as plastering, great difficulty is anticipated, with the result that wherever possible, substitutes involving the use of other trades are being employed. It is probable, however, that the average cost of labor will continue approximately on the basis of labor costs as in the spring of 1922, with some increases.

Architects who are placing sub-contracts in the more congested building districts are warned to deal only with the better class of established sub-contractors, since this year will probably show the highest record of non-performance because of difficulty in the labor situation.



THESE various important factors of change in the building situation are recorded in the chart given here: (1) *Building Costs.* This includes the cost of labor and materials; the index point is a composite of all available reports in basic materials and labor costs under national averages. (2) *Commodity Index.* Index figure determined by the United States Department of Commerce. (3) *Money Value of Contemplated Construction.* Value of buildings for which plans have been filed based on reports of the United States Chamber of Commerce, F. W. Dodge Co., and *Engineering News-Record.* (4) *Money Value of New Construction.* Total valuation of all contracts actually let. The dollar scale is at the right of the chart in millions. (5) *Square Foot Area of New Construction.* The measured volume of new buildings. The square foot measure is at the left of the chart. The variation of distances between the value and volume lines represents a square foot cost which is determined first, by the trend of building costs, and second, by the quality of construction.

Factors of Fluctuation in Building Costs



THE above chart in the upper part indicates the approximate division of the money invested in new building, and in the lower part the number of square feet represented by new construction. Building construction is divided into four general classes permitting the relative importance of each field to be visualized, while the total of each monthly column shows the entire volume of investment. While housing activity maintains its lead, a notable increase in the amount of industrial building and a surprising gain in the more expensive public building types are noted in January.

MONTHLY TREND OF BUILDING COSTS

Under this heading will be found each month a discussion of the trend of building costs which provides information as to the various important factors affecting its upward or downward course. Items of information as to cubic foot costs and other data of importance will be found here.

THE anticipated unsettled condition of the building material market is in full evidence as April approaches. There has been a great rush to cover on basic materials and special equipment for many types of building operations, resulting in placing of approximately one-third more advance orders during this spring than was ever known in any spring season.

The index of building cost as shown in the chart on the preceding page has risen steadily, and it is anticipated that at this time there must come a considerable falling off in the volume of orders for material and equipment. This will be partially due to increased cost, but probably more extensively due to the fact that many manufacturers will have sold out their entire production program for at least a short period.

The volume of orders which have been placed this spring indicates, however, that the total volume of new construction will be considerably above that of last year, and that while prices may defer interest on the part of building investors, there will be a constantly steady market as production and shipping facilities increase again. This market will also probably be encouraged by a very gradual reduction in as the costs index again reaches what might be termed a line of stabilization in building values. It is evident also that abnormal conditions of demand will probably result in the establishment of this line of stabilization at an abnormally high point. This condition, however, may serve to divert large quantities of building materials and labor from the congested districts of New York to its suburban areas.

It must never be forgotten that during the years preceding the war building costs were low to a point of economic unsoundness. With very few exceptions building material manufacturers were not making profits. In fact the building industry, which is the greatest industry in America, has over a period of many years shown less actual profit to those engaged in any phase of building than any of the other great industries. A condition like this may last through a period of depression and medium prosperity, but its inevitable calls for a period of prosperity within the industry immediately after a shortage of its ultimate products —buildings—insure the type of demand which makes it possible to sell both labor and materials on a basis profitable to the individual and to producing organizations.

An interesting local situation which may affect building costs around New York is the recent action of Supreme Court Judge Tierney declaring the tax-exemption law of New York unconstitutional. Thousands of dwellings and apartment buildings have been built under the exemption privileges of this law and thousands more are in course of planning for filing before April 1. A storm of protest has arisen from builders and property owners, and both the city and state of New York are joining in urging an appeal of this case. In most quarters it is felt that the constitutionality of the act will be upheld. It is also interesting to note that the attitude of the tax department of New York as recently expressed by one of its officials, will be to make no attempt to collect back taxes or to impose hardships on those who have built under the tax-exemption act in good faith.

BUILDING MATERIAL PRICES

Table Showing Average Prices Paid by Contractors for Building Materials at Local Distributing Points as of Jan. 1, 1923. Prepared by Division of Building and Housing of the Department of Commerce from Prices Secured through the Bureau of Census

Commodity	Size or Condition	Unit	Mass.		Conn.	N. Y.	Penn.		Md.	Va.	W. Va.	S. C.	Ga.	Michigan			Wis.		Iowa	
			Fitchburg	Haverhill	New London	Buffalo	Pittsburgh	Erie	Baltimore	Richmond	Fairmont	Columbia	Savannah	Detroit	Pontiac	Bay City	Saginaw	Milwaukee	Waterloo	Council Bluffs
Common Brick		1,000	$24.00	$25.00	$30.00	$20.12	$16.00	$16.75	$20.00	$18.00	$24.00	$12.00	$15.00	$17.00	$16.00	$14.00	$18.00	$13.75	$14.80	$16.50
Portland Cement	Excl. of containers	Bbl.	3.22	3.90	3.68	2.78	2.85	3.40	3.25	3.60	2.85	3.60	3.10	2.38	2.65	3.25	3.25	2.50	3.20	3.00
Yellow Pine No. 1	Dimension 2x4-16′ S1S1E	M	.....	.....	50.00	48.00	52.00	52.00	39.00	40.00	50.00	.....	30.00	55.00	50.00	45.00	53.00	42.00	43.00	50.00
Douglas Fir No. 1	Dimension 2x4-16′ S1S1E	M	.....	.....	.....	55.00	.....	.....	.....	.....	.....	.....	.....	55.00	.....	.....	.....	41.00	.....	48.00
N. Carolina Pine No. 1	Dimension 2x4-16′ S1S1E	M	.....	60.00	.....	.....	.....	52.00	.....	30.00	50.00	25.00	30.00	.....	.....	.....	.....	.....	.....	.....
Common Boards No. 1	1x6	M	53.00	48.00	40.00	45.00	49.00	50.00	.....	33.00	46.00	27.50	.....	.....	50.00	39.00	48.00	36.00	43.00	48.00
Y. P. Flooring E. G. "C"	1x4-10′-16′	M	110.00	110.00	85.00	72.00	77.00	.....	.....	75.00	.....	85.00	75.00	.....	75.00	....	100.00	85.00	90.00	100.00
Douglas Fir V. G. No. 2	1x4-10′-16′	M	.....	.....	.....	105.00	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Red Cedar Shingles	Extra clear 16″ 5 to 2	100 sq. ft.	.....	6.40	6.00	6.00	7.50	7.50	.....	.....	6.75	.....	.....	7.75	7.00	6.75	6.00	5.80	6.00	7.00
Cypress Shingles	Extra clear 16″ 5 to 2	100 sq. ft.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	6.50	.....	.....	.....	.....	.....	6.00	.....
Composition Shingles	Crushed slate surfaced	100 sq. ft.	7.75	7.80	.....	.....	6.25	6.00	.....	6.00	6.25	6.25	6.25	7.50	7.00	6.75	6.50	6.25	7.00	8.00
Gypsum Plaster Board	⅜″	1,000 sq. ft.	.....	50.00	35.00	45.00	37.50	45.00	55.00	40.00	32.00	35.00	40.00	50.00	40.00	40.00	30.00	.....	32.00	.....
Lime	Hyd. Com	Ton	20.00	20.00	.....	16.00	22.00	20.00	15.00	20.00	15.00	20.00	17.50	22.00	16.00	15.00	18.00	.....	.....	.....
Building Sand		Cu. yd.	1.60	2.50	1.50	1.28	2.50	3.00	2.00	3.04	3.15	1.00	1.75	3.00	1.50	2.00	3.00	2.10	1.75	3.50
Crushed Stone	¾″	Ton	3.00	3.00	.....	1.30	5.50	3.00	.....	3.40	4.50	3.00	.....	3.00	.....	3.75	5.00	2.25	3.50	5.00
Window Glass	Single A 10″x12″	50 sq. ft.	.....	.....	.....	4.20	5.58	.....	4.80	4.50	4.40	6.10	5.50	4.50	.....	5.40	4.50	.....	.....	.....
Hollow Tile	8″x12″x12″	Each	.27	.27	.25	.22	.21	.19	.21	.25	.23	.20	.....	.21	.18	.17	.20	.15	.13	.14
Cast Iron Soil Pipe	4″ E.H. 13 lbs. per ft	Ton	.....	.....	.....	58.80	.....	.....	.....	.....	85.00	.....	.....	.....	53.00	51.00	52.00	.....	50.00	.....
Steel Pipe	1″ galv.	100 ft.	.....	.....	.....	10.00	8.84	.....	9.00	9.25	10.50	10.95	10.80	9.45	9.00	9.00	9.50	9.87	12.00	.....
Reinforcement Bars	¾″ square	100 lbs.	3.35	.....	3.75	.....	3.25	.....	2.90	3.35	3.00	4.25	3.50	2.75	3.50	3.40	3.75	2.25	3.35	3.20
Structural Steel	Fab. 6″ I-beams	100 lbs.	.....	.....	.....	3.20	.....	.....	.....	4.10	5.00	4.25	5.00	4.75	4.50	4.25	4.50	5.50	4.80	.....
Gypsum Plaster	Neat	Ton	24.00	.....	.....	13.50	22.00	.....	21.50	22.00	19.00	19.50	19.50	15.00	17.00	18.00	20.00	.....	18.00	18.00
Roofing Slate	No. 1 Ribbon	100 sq. ft.	.....	.....	.....	.....	13.50	.....	.....	13.00	12.50	.....	.....	.....	.....	16.50	17.25	.....	16.00	.....
Tar Paper Roofing	2-ply 75 lbs. per roll of	100 sq. ft.	3.35	.....	.....	2.00	1.95	2.00	.....	2.00	.....	.....	1.75	3.00	.....	2.70	.....	.....	3.00	3.80
Rosin Sized Sheathing	3-ply 30 lbs. per roll of	500 sq. ft.	1.75	1.60	.....	1.55	1.20	.85	1.25	.....	1.25	.....	.85	.....	1.00	1.00	1.50	.....	2.00	1.50

Commodity	Size or Condition	Unit	Missouri		Ohio					Louisiana		Tex.	Ariz.	Wash.		Ore.	N. D.	S. D.	Calif.	
			St. Louis	Kansas City	Cleveland	Akron	Toledo	Dayton	Cincinnati	New Orleans	Shreveport	San Antonio	Tucson	Seattle	Spokane	Portland	Grand Forks	Sioux Falls	San Francisco	Sacramento
Common Brick		1,000	$15.50	$16.50	$18.00	$15.00	.....	$17.00	$20.00	$15.75	$13.50	$15.00	$12.00	$20.00	$18.00	$22.00	$13.30	$15.20	.....	$17.00
Portland Cement	Excl. of containers	Bbl.	2.85	2.80	3.40	.....	$3.48	3.52	.....	3.60	3.20	2.90	4.60	3.00	.....	3.40	4.00	2.76	$3.15	3.40
Yellow Pine No. 1	Dimension 2x4-16′ S1S1E	M	43.00	48.50	57.00	50.00	49.00	45.00	48.50	42.00	.....	55.00	60.00	.....	.....	.....	.....	.....	.....	.....
Douglas Fir No. 1	Dimension 2x4-16′ S1S1E	M	42.50	48.50	.....	.....	.....	.....	.....	.....	.....	.....	.....	20.00	28.00	20.00	50.00	47.50	35.00	41.50
N. Carolina Pine No. 1	Dimension 2x4-16′ S1S1E	M	.....	.....	.....	.....	.....	45.00	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Common Boards No. 1	1x6	M	47.00	53.50	50.00	50.00	.....	.....	.....	40.00	.....	47.00	55.00	20.00	.....	21.00	48.00	44.00	35.00	43.00
Y. P. Flooring E. G. "C"	1x4-10′-16′	M	80.00	80.50	92.00	95.00	80.00	90.00	.....	85.00	88.00	100.00	97.50	.....	.....	.....	.....	.....	.....	.....
Douglas Fir V. G. No. 2	1x4-10′-16′	M	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	56.00	70.00	51.00	95.00	80.00	69.00	81.50
Red Cedar Shingles	Extra clear 16″ 5 to 2	100 sq. ft.	6.53	6.50	6.40	5.60	6.40	5.20	6.00	.....	6.75	8.50	7.00	.....	.....	4.25	7.50	.....	.....	.....
Cypress Shingles	Extra clear 16″ 5 to 2	100 sq. ft.	.....	.....	.....	.....	.....	.....	.....	.....	6.50	.....	.....	.....	.....	.....	.....	.....	.....	.....
Composition Shingles	Crushed slate surfaced	100 sq. ft.	6.10	5.80	6.00	.....	6.75	6.00	6.25	.....	7.70	8.50	.....	.....	.....	.....	8.00	7.50	7.50	7.00
Gypsum Plaster Board	⅜″	1,000 sq. ft.	41.00	32.00	30.00	32.50	28.75	32.50	.....	.....	.....	.....	55.00	35.00	.....	40.00	60.00	35.00	43.00	.....
Lime	Hyd. Com	Ton	20.00	24.00	16.80	18.80	20.00	14.00	.....	18.00	.....	27.50	.....	22.00	.....	26.00	.....	22.50	25.00	.....
Building Sand		Cu. yd.	2.60	2.50	2.50	1.75	2.25	1.80	1.80	2.00	2.00	2.75	1.15	1.75	.....	1.60	3.00	1.40	1.25	1.50
Crushed Stone	¾″	Ton	.....	3.00	3.50	3.25	3.00	2.50	1.80	.....	5.15	2.10	3.00	2.00	.....	.....	.....	.....	2.00	2.75
Window Glass	Single A 10″x12″	50 sq. ft.	4.25	4.60	.....	5.40	.....	4.50	.....	4.50	.....	.....	.....	4.42	4.43	.....	4.80	.....	4.64	4.55
Hollow Tile	8″x12″x12″	Each	.....	.22	.....	.17	.....	.18	.16	.23	.25	.21	.18	.30	.....	.....	.....	.....	.24	.....
Cast Iron Soil Pipe	4″ E.H. 13 lbs. per ft	Ton	.....	.....	.....	71.59	.....	65.00	.....	84.85	.....	.....	.....	75.00	.....	70.00	.....	.....	82.62	83.00
Steel Pipe	1″ galv.	100 ft.	.....	.....	.....	10.08	.....	8.57	.....	10.37	9.40	10.12	.....	12.00	12.38	14.00	12.86	.....	10.85	10.85
Reinforcement Bars	¾″ square	100 lbs.	.....	.....	.....	3.25	.....	3.00	.....	4.00	3.75	3.60	5.00	.....	4.35	3.85	4.85	4.00	3.30	3.65
Structural Steel	Fab. 6″ I-beams	100 lbs.	4.00	3.75	.....	.....	.....	.....	.....	.....	4.00	4.50	.....	5.00	4.45	.....	.....	4.35	5.50	4.30
Gypsum Plaster	Neat	Ton	18.50	15.50	.....	19.00	.....	19.00	.....	.....	24.00	25.00	23.00	21.00	.....	24.00	.....	.....	18.00	.....
Roofing Slate	No. 1 Ribbon	100 sq. ft.	.....	.....	.....	11.40	.....	15.00	.....	.....	12.00	17.00	.....	.....	.....	.....	.....	.....	20.00	.....
Tar Paper Roofing	2-ply 75 lbs. per roll of	100 sq. ft.	.....	.....	2.50	2.40	.....	2.25	.....	2.00	2.60	3.25	3.00	2.60	2.05	.....	.....	2.70	1.70	.....
Rosin Sized Sheathing	3-ply 30 lbs. per roll of	500 sq. ft	1.05	1.25	.90	.75	.....	1.15	.....	1.50	1.50	1.35	1.40	1.20	.....	1.70	1.75	1.30	1.50	.....

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A group of nationally known experts on various technical subjects allied to building, providing a direct service to architects

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(*b*) That no committee member has affiliations with any manufacturer;
(*c*) That no committee member will be called upon for detailed service excepting by special arrangement;
(*d*) That a special editorial article on a subject represented under each of the headings below shall be prepared during the year by the Committee member.

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Address inquiries to committee members, care THE ARCHITECTURAL FORUM, 103 Park avenue, New York

THE FORUM DIGEST

A SURVEY OF IMPORTANT CURRENT ARTICLES ON BUILDING ECONOMICS AND BUSINESS CONDITIONS AFFECTING CONSTRUCTION

The Editors of this Department select from a wide range of publications matter of definite interest to Architects which would otherwise be available only through laborious effort

INCREASES IN BUILDING TRADES PAY SINCE 1914

THE following tabulation is a comparison of the wages paid in New York for a day of eight hours by members of the Building Trades Employers' Association in the pre-war year of 1914 and under the present scales. Except where otherwise noted, the present scales call for double time for overtime and for observance of holidays:

	1914	1923
Asbestos workers	$4.75	$9.00
Bluestone cutters and setters	4.50	9.00
Bricklayers	6.00	10.00
(1) Bricklayers' laborers	3.20	7.00
(2) Carpenters		
Manhattan	4.00 5.00	9.00 9.00
Bronx	3.78 4.50	9.00 9.00
Brooklyn	3.78 4.50	9.00 9.00
Queens	4.50	9.00
Richmond	3.78 4.00	9.00 9.00
Cement masons	5.00	9.00
(3) Concrete laborers	2.24 3.00	6.50 6.50
Composition roofers and waterproof workers	3.50	8.00
Electrical workers	4.80	9.00
Elevator constructors	5.28	9.00
Elevator constructors' helpers	3.40	7.00
Engineers, united portable	6.00	10.00
House shorers and pilers	3.68	9.00
Housesmiths, structural	5.00	9.00
Marble cutters, carvers and setters	5.50 6.00	9.00 10.00
Metallic lathers	5.00	9.00
Mosaic workers	4.25 4.50	9.00 9.00
Painters and decorators	4.00 4.50	9.00 9.00
Plasterers	5.50	10.00
Plasterers' laborers	3.25	7.50
Plumbers and gas fitters	5.50	9.00
Roofers and sheet metal workers	5.00	9.00
Slate and tile roofers	5.50	9.00
Steam fitters	5.50	9.00
Steam fitters' helpers	3.00	7.00
Stone cutters	4.50 5.50	9.00 9.00
Stone setters	6.00	10.00
Stone masons	4.80	10.00
Tile layers	5.50	9.00
Tile layers' helpers	3.00	7.00

(1) Time and a half for overtime; double time for Sundays and holidays.

(2) In carpenters' scale where two figures are given they are for shop work and outside work, respectively.

(3) Time and a half for overtime.

NEW YORK BUILDING CONDITIONS AS SEEN BY EMPLOYERS' ASSOCIATION

FROM the *New York Herald* of March 19 we quote some passages from the report covering an interview with Samuel B. Donnelly, Secretary of the Building Trades Employers' Association which indicates the opinions of employers with regard to this season's building conditions in New York:

"It appears to me, after careful study of the situation, that the cost of building construction for the next three years is going to be 75 per cent higher than the 1913 average. Recent increases in the prices of many basic materials are generally affecting wholesale prices. They indicate higher prices for building materials in 1923 than were paid during 1921 and 1922. The upward price movement in building materials, which began in 1915, reached its peak in April, 1920. In May, 1920, prices began to recede, and the recession movement continued until September, 1921. From that date until March, 1922, there was little change, but in April, 1922, a gradual and continuous upward movement began and has continued until the present time.

Basic Costs to Stay Up

"I do not look for any material change for the better in the railroad situation or in the cost of freights. There is no immediate prospect of any abatement in the serious shortage of labor, both skilled and unskilled, for congress is unwilling to modify our present restrictive immigration law, and there is no better prospect of legislative measures looking to the cheapening of coal and fuel oil.

"There will be no abatement in the immediate demand alike for material and labor, for the building boom is going ahead in larger volume than ever. The housing construction already achieved under stimulus of the tax-exemption laws and other incentives has done little more than keep pace with our normal increase of population. We have yet a long way to go before we shall have compensated for the non-productive housing years of the war.

Capital Available

"Furthermore, we have an abundance of capital available for building loans, and money rates are not too high. So long as money remains easy, this building movement is going to go right ahead, despite high costs of labor and material.

"Coming now to the cost of building as distinguished from the cost of materials, we find that the peak price of building was reached in April, 1920, after which prices receded until August, 1921. The drop, however, was not so great as that in the cost of building materials. Labor costs receded only 10 points, while the cost of building materials receded 45 points.

"That brings us naturally to the question of the present wage status. We read of wood lathers in Brooklyn being paid as high as $22 a day. There is no doubt that speculative builders, spurred by competition, are tempting mechanics in some of the trades where there is an inadequate supply by offering either large bonuses over and above the regular wage scales or else heavy overtime allowances. The Brooklyn lathers who earned recently in excess of $20 a day did it while working under a piece system at so much a bundle and while employed by 'independent' speculative builders not affiliated with this association.

Rival Bidding to Blame

"Should there be in 1923 this kind of a runaway labor market, the responsibility for it will rest mainly upon the owners and operators, who will bring it about by bidding against each other for the available supply of labor. The present rates for all trades were fixed in the spring of 1920, when the cost of living had reached its peak, and they have been paid continuously since that time, although there has been a decrease of 25 per cent in the cost of living.

"The great shortage of skilled labor can be remedied by utilizing the more intelligent semi-skilled and by the dilution of labor, as was practiced during the recent war period. Intelligent direction and instruction of labor must be adopted in all industries, and unreasonable restriction and regulation of apprentices must cease. Many of the local unions have failed to support efforts being made to encourage and induce apprentices to enter the trades, while others have hindered them by the imposition of unreasonable restrictions.

"The American boy is confident he can master any trade within three years. Some relief can be provided and the supply of mechanics increased if the employers and the unions will work together to accomplish that worthy purpose. First, they should raise the maximum age limit for learners to 25 or 30 years; second, they should provide for a course of intensive training in trade classes; third, they should provide for a short period of training in actual work, and, fourth, they should pay journeymen's wages to the learner as soon as he proves himself competent."

ELIMINATING THE IRRESPONSIBLE BIDDER

THESE are times when an architect must give serious consideration to the integrity and standing of the contractor and sub-contractor. As never before, proof is being shown of the fact that the high bid is often the cheapest. We include here an extract from an article by

W. A. Simpson, appearing in *The Contractor*, in which architects and bonding companies are called upon to recognize qualifications other than price:

"The best medium through which to reach the public is the architects. If we are to be given any consideration at all, they must select bidders who are responsible. They must not allow bids of men who are not responsible to be held as clubs over the heads of those who are, in order to get the prices down. We are up against it time and time again where the architect does not pick his contractor. He gets little men to figure jobs that are beyond them. They make errors and mistakes all the way through and come out with low bids; then the architect goes to some contractor with a good name and responsibility and holds over him the price of the other to beat him down. That is tried hundreds of times, and that is something as to which we must educate the architect. The architects must recognize the efforts we are putting forth to bring irresponsible men to their senses, and through them only will we reach the private individual who is always putting all contractors in the same class.

"The bonding companies can be of the greatest help in this elimination process. With all due respect to the bonding companies' representatives when they say that the prime requisite for a surety bond is honesty, every one of us knows of cases where men utterly without principle or pretense of honesty have secured surety bonds because they had large statements or silent partners who had. Bonding companies stand in our way for a general clean-up of irresponsible contractors. They do not demand skill, integrity and responsibility as a primary factor. They demand a financial statement. Of course, they might take some moral chance on a man who has all first class qualifications excepting a financial statement; the question is, what percentage do they refuse, when the man has a first class statement and no other qualifications? Judging from my observation, I will say it is very small indeed.

"It is usually easy to approach every type of contractor excepting the man who believes that he can buy and hire every qualification necessary to make him a responsible contractor."

THE COURSE OF CONSTRUCTION COSTS

IN a recent issue *Engineering News-Record* presents a pithy comment on the building cost situation as it obtains about the middle of March, 1923:

"A glance at Chart I shows what appears to be a paradox: construction cost rising steadily month after month, while contract volume declines. When prices of building materials were at the minimum, in May, 1922, the volume of large contracts awarded was 79 per cent above 1913. In February, 1923, the cost index had mounted to 197.40, and contracts stood at 105 compared with 100 in 1913. At present the *E. N.-R.* Cost Index registers 205.25, with the trend still upward.

"Chart II, however, largely explains the anomaly. Cost declined throughout 1921, while contract letting was 8 per cent below the 1913 par. Furthermore, in last seven months of 1920 the Construction Volume Index (C.V.) averaged 30 per cent below 1913. The lowest cost point occurred in March, 1922, when the general decrease from the peak was 38 per cent. The very next month showed a 3-point increase, and thereafter construction cost began its re-inflation. In March, also, the heavy contract letting of 1922 began, the C. V. being 162 on the basis of four issues of *Construction News*. The peak (179) occurred in May. In these three months over half a billion dollars' worth of large contracts was awarded. Volume fell off heavily in June and July, but nevertheless has remained consistently about 100, and has thus permitted the maintenance—and even the continued inflation—of cost.

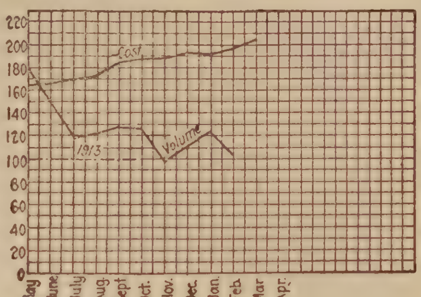


Chart I—Present Situation. Cost Rising Volume Declining

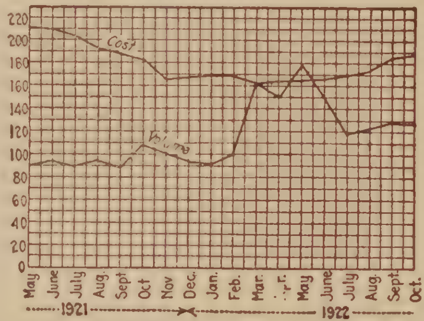


Chart II—Construction Cost and Volume Since May, 1921

"Whether cost will continue to advance and, if so, for how long, will depend very much upon the amount of work placed under contract in the next three months. A C. V. of less than 120 would probably check the rising tide of prices. Indications are that March contracts will considerably exceed those of the previous month. Anything more would be a mere guess.

"At present the mill price of structural steel is $2.25 to $2.50 per 100 lbs., with a decided leaning to the higher figure. Lumber has been steady for the last month, as have brick and lime. In the last few weeks two large cement companies have announced advances."

PRACTICAL PHASES OF OFFICE BUILDING DESIGN

FROM the building manager's viewpoint there are certain essentials of architectural planning which are important in relation to the ultimate success of an office building project. Some of these points are brought out in an interesting and instructive manner in an article by Clarence T. Coley, recently published in *Buildings and Building Management*. This article is based on an address made by Mr. Coley before a meeting of the Building Managers' and Owners' Association of New York, from which we quote:

"Up to the present the speakers who have made addresses at these meetings have been experts who came before us to give enlightenment upon special subjects of which their knowledge was greatly superior to our own. I stand before you as one of yourselves, one who, having been assigned a subject upon which I am no better informed than any of my listeners, simply puts out a few thoughts which will serve to sharpen our memories and bring out certain points, the discussion of which may benefit us all. I like to consider an office building as a pile of cubes, arranged economically, so as to be convenient to the persons who are to occupy space, but at the same time artistically, so that the whole may be pleasing to the eye. Thinking of a building in terms of cubes, it is easily visualized as cubic feet and thence mentally resolved into dollars and cents. Thinking of a building in terms of cubic feet while it is in course of construction, it is easy to keep in mind that for every additional cubic foot one is putting in so many additional dollars.

The Building as an Investment

"The dollar is a severe taskmaster because we have got to realize that so long as the building stands we must work for each dollar that is put into the building. We must earn interest on the cost of that cubic foot, we must pay operating and maintenance expenses and taxes out of the earnings of that unit and still be able to return a profit to the owner. We must save and economize so that in a given time we can write off depreciation. The responsibility that lies with us is very great, because we must always bear the burden of paying interest, profits, and all fixed charges and taxes out of the returns from the cubic feet of space contained in a building—into which building, in too many cases, cubic feet have been uselessly incorporated. In fact, the main thought that I can bring before you today is the necessity of trying to eliminate every useless cubic foot of building space that it is possible to get rid of, so that the future burden may be as light as possible.

"Architecture and habit are probably generally responsible for the way a given plot of land is developed. Almost always it is desired to build over as large a part of the plot as possible, and yet the available land is apt to be irregular in shape and undesirable in dimensions. You have to take the plot that is left—whatever the other fellow may be willing to sell—and you must try to build economically on the available plot. It is like trying to make a round plug fit into a square hole. In order to erect an ideal office building we must start by determining the size and shape of an ideal individual office in that building. Having determined the dimensions of an ideal office, the problem is to find how many such offices we can build above or below or beside one another in order to produce the ideal office building. How far we get depends somewhat upon the pocketbook and somewhat upon building restrictions in the city where the structure is located. We must bear in mind that the ideal office necessitates carrying about 50 per cent of its own volume in utility volume. This means that a well designed office building contains about 66 per cent of rentable space and 33 per cent of utility space, which latter includes corridors, elevator shafts, staircases and what not. The office rent must carry the cost of the whole.

The Best Dimensions for Offices

"What is the ideal size for an office? Probably I should get 25 different answers to that question here. Since I have the floor I am going to give my opinion of the ideal office, and then perhaps change it when I hear yours. I believe that an office of right proportions should be 24 feet deep in the clear from the outer wall of the building to the corridor partition; it should be 16 feet wide in the clear between the two side walls, and, in this climate, it should have a clear height of about 11 feet from floor to ceiling. If you were much farther south the public would require you to raise your ceiling heights; as you went farther north you could lower your ceiling heights to as low as 9 feet. The warmer the climate the higher must be the ceiling to prevent the feeling of oppressiveness; in cooler climates you can lower the ceiling considerably without producing that feeling.

"It will be noted that the proportions between width and length of the ideal office room are as two is to three. Office tenants are always looking for wall surface, for something against which equipment may be set. The greatest possible floor area in comparison with the length of enclosing walls could be enclosed in the form of a circle, but a circle is about the most undesirable shape that could be devised for an office. The most desirable office contains a minimum floor area with a maximum of available wall space, since the area near the walls is the usable area. The shape to be aimed at is that which combines maximum length of wall space with the width that provides all space required for actual use but a minimum area of unused space in center of room.

"I believe that an office whose floor dimensions are 16 x 24 provides the maximum amount of wall space with a sufficient open area in the center of the office. You will find that an office 16 x 24 divides up very well into inner and outer offices, each inner office being about 8 feet wide and 12 feet long if one man wishes to work alone in it, or if he desires to have a secretary in the same office the length should be increased to 14 feet. In case inner offices of unequal size are desired, the available space may readily be cut up into one office 9 feet wide and one 7 feet wide. If the private offices are made 8 x 12 there will be left for the outer office a space of 12 x 16, the dimensions of which are in the ratio of three to four.

Windows and No Windows

"In such a unit bay as we have here described there should be two windows. In theory, at least, an office building would be best built without windows. It should be artificially ventilated and artificially lighted. Such an arrangement would probably make for much greater efficiency on the part of those working within the building. The poorest light that can be imagined is window light, for the reason that it comes from one direction and makes variable shadows. When daylight fails and you resort to artificial light an entirely different type of light is produced, but a kind of light that is absolutely uniform and can be regulated to suit the requirements of the individual.

"By artificial ventilation instead of using windows you would obtain very much better results. Ventilation through an open window causes direct drafts. The source of heat being generally at the outer wall and under a window makes any one sitting near it uncomfortably hot, while those away from the window are subjected to cold drafts, particularly when the window is open for ventilation. By using artificial ventilation warm air can be supplied without drafts and also with a sufficient percentage of moisture.

"However, windows are demanded in offices and business buildings because we use windows at home, and the same conservative tendency that causes this demand would make it very hard to get tenants for offices not lighted by windows and not permitted ventilation by the ordinary haphazard method practiced in our residences. Windows in an office of the dimensions just specified should be 4 feet, 6 inches wide and 7 feet, 6 inches high. This gives about one-third of the total superficial area of the building as window area. Many of the most successful designs in commercial office buildings are obtaining this proportion of glazed surface.

Corridors, Their Width and Lighting

"What is the desirable width for corridors? I think that a corridor 6 feet, 6 inches to 7 feet in width is best with an 11-foot ceiling. No matter what the length of such a corridor, it will look well if laid out in these proportions, which it will be noted bear the relation in width and height as two is to three.

"Much money is needlessly spent in borrowing light for corridors from the offices; that is to say, in putting in windows between corridors and offices. This makes a very expensive form of construction, and it also destroys useful office wall space. In case bookcases, filing cabinets, etc., are placed against the office sides of corridor windows these objects become visible from the corridor and have a very objectionable effect from without. I believe that corridors should be artificially lighted at all times. The doors between the offices and the corridors may be glazed with full length or two-thirds panels. Wainscoting in corridors should be 4 feet, 6 inches high. Polished marble makes a very handsome wainscoting, and its surface curbs the tendency of office boys and others to decorate with lead pencil.

Width of Office Doors

"Doors between corridors and offices must be large enough to take in prevailing sizes of office furniture. I find that a door 42 inches wide is necessary to take care of tables, desks, and pieces of furniture as they are usually made today. Doors between offices, however, may be as narrow as 30 inches, or just wide enough to enable a person to pass comfortably.

Proper Depth for Wings

"The total width of the wings of any building; that is, the distance from outside wall including two offices and central corridor separating them, should not exceed 58 feet. This dimension would be made up thus: beginning with outside surface of one outer wall of the building, we have outer wall, 1 foot; clear depth of office, 24 feet; corridor wall, 6 inches; clear width of corridor, 7 feet; corridor wall, 6 inches; clear depth of office, 24 feet; thickness of outer wall, 1 foot; total, 58 feet. Many buildings are designed with greater depths than these, but in such cases offices are obtained of such a depth that they cannot be rented advantageously."

DETERMINING OFFICE BUILDING RENTAL PROFITS

PRACTICAL information direct from building managers regarding the investment phases of office building projects is always of value to architects because of its relation to the practicability of such projects. These opinions of Douglas Grant Scott were recently presented in *Buildings and Building Management.* Valuable data for comparative purposes will be found here:

"The company whose buildings I manage has for 20 years owned and operated never less than $30,000,000 worth of property; 'owned and operated,' I contend to be only a figure of speech, for in reality they have built and marketed fifteen hundred thousand square feet per annum. Through its principal subsidiary it has erected hundreds of millions of dollars' worth of buildings for other people. We have not only learned by going through the most expensive school in the world, 'experience,' but we have to render quick judgment upon propositions brought in by others for the reason that we have been frequently called upon to help finance a project so as to secure the building contract. Invariably they attempt to prove by the prospective earnings that the second mortgage can be easily amortized, that being the manner in which we are to receive most of our profit. So I take the privilege of bringing before you one of our thumb rules—a result either of my ingenuity or analysis, or perhaps my fancy and imagination—that is for you to decide, the premise of the rule being in the original production cost of every net rentable square foot. I attempt to handle a square foot, relatively, the same as if we manufactured and marketed fish hooks, lawn mowers or locomotives.

"I take first the square foot cost of the land and add to it all moneys expended on a square-foot basis. For instance, I find that office buildings (so-called, many of them being monuments for decorative purposes or tombstones of departed ambitions) vary in cost from $10 to $30 a square foot, and are usually assessed at a rate 20 per cent less. We now have the original cost and are ready to start manufacturing. It is universal knowledge, and I substantiate it by the remark of the late Russell Sage, that 'we begin by borrowing the other fellow's money, at no more than a legal rate of interest.' I have assumed that we use 50 per cent of our own capital, and 50 per cent loaned to us on mortgage, provided our building is a success. The more money we can borrow, the greater percentage of net profit, and in the hypothetical case I have just set up, I have amortized the mortgage on a 1½ per cent basis, which you will learn is practically the same as allowing 2 per cent per annum for the depreciation on the cost of your building. For the year 1922, I have allowed 70 cents a square foot to cover all operating costs, including supervision. Some of you operate for less, and the profits vary accordingly. I have based taxes upon 80 per cent total cost, and you are liable to find the answer will be the same in all parts of the country, no matter by what method you arrive at it.

"Now, another point I desire to bring out right here. I believe that capital invested in such a product as ours is entitled to earn not less than 10 per cent. The equity I construe purely as capital. If you have $1,000,000 of your own money invested in a building, that is your capital. Any capital investment that borders on the hazardous is entitled to a greater yield than government bonds or savings bank interest. A man should be repaid for his foresight and benefit to mankind, for it is a benefit when we make it possible for industries or professions to conduct their business upon land more valuable than they can afford to own.

"I find on possessing a $10 a square foot building in New York, the manufacturing cost before profit would be $1.32 a square foot. If we sell our entire output to make 10 per cent on our capital, we must sell at $1.82 a square foot; if we are only going to get rid of 90 per cent of our output, we must sell at $2.02 a square foot; 80 per cent of our output, $2.28; 70 per cent of our output, $2.60. Of course, it is understood that these prices bring the average rate for the whole building, from basement to roof, to the aforesaid mentioned figure. Naturally, the top floor and the cigar stand are not sold at the same rate. I believe that to become the best soothsayer one must become the best student of history. For a period of years we never sell more than 90 per cent of our output, hence selling prices must be gauged upon this deduction.

"I find on possessing a $15 a square foot building, the manufacturing cost before profit would be $1.63. If we sell our entire output to make 10 per cent on our capital, we must sell at $2.38 a square foot; if we are only going to get rid of 90 per cent of our output, we must sell at $2.65 a square foot; 80 per cent of our output, $2.98, 70 per cent of our output, $3.40. I find on possessing a $20 a square foot building, the manufacturing cost before profit would be $1.94. If we sell our entire output to make 10 per cent on our capital, we must sell at $2.94 a square foot; if we are only going to get rid of 90 per cent of our output, we must sell at $3.26 a square foot; 80 per cent of our output, $3.68; 70 per cent of our output, $4.20.

"I find on possessing a $25 a square foot building, the manufacturing cost before profit would be $2.25. If we sell our entire output to make 10 per cent on our capital we must sell at $3.50 per square foot; if we are only going to get rid of 90 per cent of our output, we must sell at $3.89 a square foot; 80 per cent of our output, $4.38; 70 per cent of our output, $5 a square foot. I find on possessing a $30 a square foot building, the manufacturing cost before profit would be $2.56. If we sell our entire output to make 10 per cent on our capital, we must sell at $4.06 a square foot; if we are only going to get rid of 90 per cent of our output, we must sell at $4.51 a square foot; 80 per cent of our output, $5.08 a square foot; 70 per cent of our output, $5.80 a square foot.

"I have carried these figures out on buildings costing as high as $30 a square foot. Beyond $30, we had better not go, or all of us who manage buildings will want to change jobs with the other fellow. Buildings beyond $30 a square foot are liable to earn on their capital investment the same rate as shipping board boats that were sold during the war at $200 a ton, competing with boats costing $50 a ton, traveling to the same ports and getting the same rates for carryng freight; and the manager of this type of building cannot be expected, irrespective of his ability and energy, to produce the same results as a man marketing the space of a $15 a square foot building. The $25 buildings I have just referred to, it so happens, have recently been marketing their space at approximately $5 a square foot. Other buildings costing as low as $15 have been securing the same rate, and others costing as high as $30 have secured no more. In fact, I know of two buildings in the financial district, no more than 100 yards apart as the crow flies—and that is sometimes a long distance in New York—one costing $14 and the other $40, both supplying space to the public at the same rate per annum. It is easy to understand that one of these buildings is an artistic success and the other, as it were, at the box office. This system is, perhaps, to some of you, so elemental as to appear academic, and to a professional operator on a shoe string basis perhaps entirely irrelevant. Criticism on your part will require thinking. Thought on the subject is all I ask.

REASONABLE PRICES WILL MAKE 1923 A BANNER YEAR

From a recent issue of *Engineering News-Record* we quote this interesting review of past building conditions and prophecy as to future prospects:

DECLINE from the record prices of 1920 began in November of that year and proceeded steadily until December, 1921. The cost curve then remained fairly flat for the next 6 months, the long upward swing (which still continues) starting with June, 1922. The rise is 43 points.

Construction volume reacted favorably to the falling prices in the latter half of 1920 and throughout 1921. Cost to build had become so great by June, 1920 (the peak), that 8 months of falling prices elapsed before the volume of construction equaled the 1913 volume. The very next month, March, 1922, contracts were awarded at the rate of more than 60 per cent above the 1913 rate. April was 50 per cent above 1913, and May reached the maximum of 79 per cent. With this prospective record demand, began the cost rise which now is viewed with gravity by far-seeing men in the industry.

The *E. N.-R* Cost Index averaged 201.78 for 1921, when the Volume Index was only 88. The Cost Index is now 205.25. True, contract volume holds above the pre-war rate, and March promises to be a record month. Somewhere, however, there is a breaking-point where the volume curve will bend downward and remain low for a long time despite possible thirteenth-hour efforts to stimulate business.

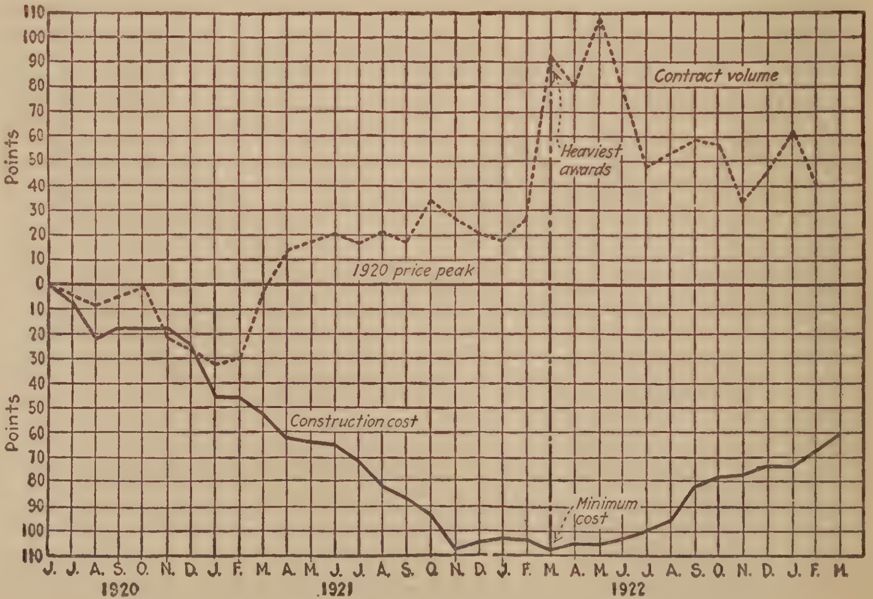


Chart Showing Construction Volume in Relation to Rise and Fall of Prices

Selected List of Manufacturers' Literature

FOR THE SERVICE OF ARCHITECTS, ENGINEERS, DECORATORS, AND CONTRACTORS

The publications listed in these columns are the most important of those issued by leading manufacturers identified with the building industry. They may be had without charge, unless otherwise noted, by applying on your business stationery to *The Architectural Forum,* 142 Berkeley St., Boston, Mass., or the manufacturer direct, in which case kindly mention this publication.

Listings in this Department are available to any manufacturer at the rate of $5 per listing per month.

ACOUSTICS

- **Johns-Manville, Inc.,** Madison Ave. & 41st St., New York, N. Y.
  - Architectural Acoustics. Booklet. 6 x 9 in. 24 pp. Illustrated. Treatise on the correction of architectural acoustics in churches, schools, hospitals, office buildings and other places.

ASH HOISTS—ELECTRIC AND HAND POWER

- **Gillis & Geoghegan, 544 West Broadway, New York, N. Y.**
  - General Catalog. 8½ x 11 in. 20 pp. Fully illustrated. Contains specifications in two forms (with manufacturer's name and without). Detail ¼" scale for each telescopic model and special material-handling section.
  - The Man-Saving Load Lifter. 5⅞ x 8⅞ in. 8 pp. Illustrated. Describes G&G Telescopic and Non-Telescopic Hoists for handling material in factories.

BATHROOM ACCESSORIES

- **The Fairfacts Company,** 234 West 14th St., New York, N. Y.
  - Catalog F. 4 x 9 in. 12 pp. Illustrated. Describes full line of china fittings for bathrooms.
  - The Perfect Bathroom. Booklet. 4 x 9 in. 12 pp. Illustrated. Shows full line, Biltin and Projecting Types, installed. For architects and clients.

BOILERS—See Heating Equipment

BRICK

- **American Face Brick Association,** 1751 Peoples Life Bldg., Chicago, Ill.
  - The Story of Brick. Third Edition. Booklet. 7 x 9¼ in. 55 pp. Illustrated. Presents the merits of face brick from structural and artistic standpoints. Tables of comparative costs.
  - The Home of Beauty. Fourth Edition. Book. 8 x 10 in. 72 pp. Color plates. Presents fifty designs for small face brick houses submitted in national competition by architects. Text by Aymar Embury II. Architect. Price 50c.
  - Bungalow and Small House Plans. Booklets. 8½ x 11 in. 50 pp. Illustrated. Four booklets, showing a variety of designs for small face-brick houses, covering 3, 4, 5, 6, 7 and 8 room houses. Price, 25c. each, $1 for the set.
  - A Manual of Face-Brick Construction. Booklet. 8½ x 11 in. Text-book on construction of the brick wall and various uses of face brick. 31 colored plates of brick houses with plans. Price, $1.00.
  - Architectural Details in Brickwork. Series 1, 2, 3. 8½ x 11 in. Very useful to the architect or draftsman. Sent free to architects applying on their office stationery. To others, $1.50.

BUILDING FINANCE

- **S. W. Straus & Co.,** 565 Fifth Ave., New York, N. Y.
  - The Straus Plan of Financing. Booklet. 8 x 6 in. 24 pp. Illustrated. Describes Straus system of co-operation with Architects, Builders, Engineers and Brokers in financing important building operations; also the making of construction loans on the larger and better properties in our large cities.
  - Forty-one Years Without Loss to Any Investor. Booklet. 8 x 5 in. 38 pp. Illustrated. A carefully prepared booklet for the thinking investor. Describes Straus bonds, the property upon which loans are made, and explains the Straus plan of safeguards which made possible the 41-year record.

BUILDING STONE—See Stone, Building

BUILDINGS, STANDARD STEEL

- **Truscon Steel Company,** 250 W. Lafayette Bldv., Detroit, Mich.
  - Truscon Standard Buildings. Catalog. 8½ x 11 in. 48 pp. Contains data and illustrations.

BUILDINGS, STEEL PRODUCTS FOR

- **Truscon Steel Company,** 250 W. Lafayette Blvd., Detroit, Mich.
  - Truscon Data Book. Catalog. 3½ x 6 in. 128 pp. Illustrated. Contains complete information with illustrations on Truscon reinforcing steel, steel windows, metal lath, standard buildings, concrete inserts, steel joists, pressed steel stampings and chemical products.

CEILINGS, SUSPENDED

- **United States Gypsum Company,** 205 West Monroe St., Chicago, Ill.
  - Jester-Sackett System of Partitions and Ceilings. Booklet. 8½ x 11 in. 24 pp. Illustrated. Contains complete architectural data.

CEMENT

- **Carney Company, The,** Mankato, Minn. Booklet. 8 x 10 in. 24 pp. Illustrated. Complete information on product, showing prominent buildings in which this cement has been used.
- **Louisville Cement Co.,** 315 Guthrie St., Louisville, Ky.
  - Brixment. Booklet. 7½ x 5 in. 16 pp. Illustrated. Brixment, what it is, what it does, how it does it and why.
- **Sandusky Cement Co.,** Dept. F, Cleveland, Ohio.
  - Medusa White Portland Cement, Stainless. Booklet. 8½ x 11 in. 48 pp. Illustrated.
  - Medusa Waterproof White Portland Cement. Booklet 6 x 9 in. 32 pp. Illustrated.
  - Medusa Review. 6 x 9 in. 18 pp. Illustrated. House organ issued bi-monthly.

CONDUIT

- **National Metal Molding Co.,** 1113 Fulton Building, Pittsburgh, Pa.
  - Bulletin of all National Metal Molding Products. In correspondence folder. 9½ x 11½ in.
  - Sherarduct. Circular. 5 x 8 in. Illustrated.
  - Flexsteel. Circular. 5 x 8 in. Illustrated.

CONSTRUCTION, FIREPROOF

- **National Fire Proofing Co.,** 250 Federal St., Pittsburgh, Pa.
  - Standard Fire Proofing Bulletin 171. 8½ x 11 in. 32 pp. Illustrated. A treatise on fire proof floor construction.
- **Northwestern Expanded Metal Co.,** 934 Old Colony Building, Chicago, Ill.
  - Fireproof Construction. Catalog. 6 x 9 in. 72 pp. Illustrated. Handbook of practical suggestions for architects and contractors. Describing Nemco Expanded Metal Lath.
  - Fireproof Construction. Handbook. 6 x 9 in. 72 pp. Illustrated. Describing Kno-Burn expanded metal lath.

DAMPPROOFING

- **Sonneborn Sons, Inc., L.,** 116 Fifth Ave., New York.
  - Specification Sheet. 8½ x 11 inches. Description and specifications of compounds for dampproofing interior and exterior surfaces.

DOORS AND TRIM, METAL

- **The American Brass Company,** Waterbury, Conn.
  - Illustrated pamphlet describing use and adaptability of Extruded Architectural Bronze Shapes for metal window frames, doors, grilles, counter screens, etc.
- **Dahlstrom Metallic Door Company,** 425 Buffalo Street, Jamestown, N. Y.
  - Architectural Catalog. 10 x 14 in. 46 pp. 11 sections. Illustrated. Catalog showing our regular styles and types of hollow metal doors and interior trim. Various types of frames and other architectural shapes also illustrated.
  - Architectural Portfolio. 14 x 18 in. 30 pp. Illustrated. Portfolio of various designs and types of Dahlstrom doors. Drawings and details of each style or type. This is only sent free to reliable architects.
- **The Compound & Pyrono Door Company,** St. Joseph, Mich.
  - Pyrono Handbook for Architects and Contractors. 8½ x 11 in. 16 pp. Contains full information regarding Pyrono Fireproof Veneered Doors and Trim, with complete details and specifications.
  - Pyrono details in sheet form for tracing.
- **Richards-Wilcox Mfg. Co.,** Aurora, Ill.
  - Fire Doors and Hardware. Booklet. 8½ x 11 in. 64 pp. Illustrated. Describes entire line of tin-clad and corrugated fire-doors, complete with automatic closers, track hangers and all the latest equipment—all approved and labeled by Underwriters' Laboratories.
- **The J. G. Wilson Corporation,** 8 West 40th St., New York, N. Y.
  - Rolling Doors and Shutters. Book. 8½ x 11¾ in. 80 pp. Illustrated. A handbook for engineers and architects, showing details, dimensions and photographs of installations.

DRAFTING MATERIALS

- **American Lead Pencil Company,** 220 Fifth Ave., New York, N. Y.
  - VENUS Pencil in Mechanical Drafting. Booklet C20. 6 x 9 in. 16 pp. Illustrated. Describes the many possibilities of the VENUS for technical drawing.
  - Catalog. 3¾ x 8¾ in. 25 pp. Illustrated. Describes pencils, holders, erasers, etc.

DUMBWAITERS

- **Kaestner & Hecht Co.,** Chicago, Ill.
  - Bulletin 520. Describes K. & H. Co. electric dumbwaiters. 8 pp.
- **Sedgwick Machine Works,** 151 West 15th Street, New York.
  - Catalog and Service Sheets. Standard specifications, plans and prices for various types, etc. 4¼ x 8¼ in. 60 pp. Illustrated.

ELECTRICAL EQUIPMENT

- **Frink, Inc., I. P.,** 24th Street and 10th Avenue, New York, N. Y.
  - Catalog 415. 8½ x 11 in. 46 pp. Photographs and scaled cross sections. Specialized bank lighting, screen and partition reflectors, double and single desk reflectors and Polaralite Signs.
- **General Electric Company,** Schenectady, N. Y.
  - Wires and Cables. Booklet. 8 x 10½ in. 85 pp. Illustrated. Four bulletins in a binder, describing wires and cables in general, conductors insulated with vulcanized rubber compound, varnished cambric and paper insulated cables, splicing materials and junction boxes for cable installations, armored cables.
  - Electric Fans. Folder. 6 pp. 3¼ x 6 in. Illustrated. Describes 1922 line of electric fans, giving catalog numbers, voltages and frequencies.
  - Reliable Wiring Devices. Catalog. 3 x 4⅝ in. 206 pp. Illustrated. Pocket catalog giving prices, schedule classifications and data for socket receptacles, switches, rosettes, cutouts and fuses for miscellaneous devices.
  - Lighting of Public Buildings. Bulletin. 6 x 9 in. 25 pp. Illustrated. Describes lighting of galleries, banks, museums, libraries, municipal, county and state buildings.

SELECTED LIST OF MANUFACTURERS' PUBLICATIONS — *Continued from page 69*

ELECTRICAL EQUIPMENT — Continued

Hart & Hegeman Mfg. Co., 342 Capitol Ave., Hartford, Conn.

A new H & H Switch. Leaflet. 3½ x 6 in. 4 pp. Illustrated. Illustrates a new H & H composition base push switch of DeLuxe quality.

Tumbler Switches. Booklet. 3½ x 6 in. 6 pp. Illustrated. Shows complete line of H & H Tumbler Switches.

H & H Elexits. Booklet. 8 x 10¼ in. Illustrated. Shows new complete line of Elexits—places for lights. May be used for Wall Receptacles or Electric Fixtures.

H & H Radio Button Push Switches. Booklet. 3½ x 6 in. Illustrated. Radio Luminous Buttons applied to Push Switches and Sockets.

The Holtzer-Cabot Electric Co., Amory St., Boston 19, Mass.

Signaling Systems for Hospitals. Brochure. 8½ x 11 in. 42 pp. Illustrated. Contains complete data covering Nurse's Call, Doctor's Call, "In" and "Out," Fire Alarm, Watchman's Clock and Telephone Systems.

Signaling Systems for Schools. Brochure. 8½ x 11 in. 47 pp. Illustrated. Contains complete data covering Telephone Systems, Program Bells, Fire-Alarm Systems, Low Tension Power Plant and Laboratory Equipment.

Kohler Co., Kohler, Wis.

Kohler Automatic Power and Light 110 Volt D. C. Booklet. 5 x 7 in. 32 pp. Illustrated. Describes a standard voltage automatic, electric power and light plant for isolated homes.

Simplex Wire & Cable Co., 201 Devonshire Street, Boston, Mass.

Simplex Manual Catalog and reference book. 6¾ x 4¼ in. 92 pp. Contains in addition to information regarding Simplex products, tables and data for the ready reference of architects, electrical engineers and contractors.

Specification No. 2053. For Simcore Wires and Cables. Various sizes of Conductor-Rubber Insulation.

Sprague Electric Works of the General Electric Company, 527 West 34th St., New York, N. Y.

Panel Boards and Cabinets. Catalog No. 47901. 8 x 10½ in. 70 pp. Illustrated. Panel Boards and Cabinets shown in this catalog have been selected after careful study of the general requirements. All appliances listed herein meet with the requirements of the National Board of Fire Underwriters.

Panel Circuits. Bulletin No. 47941. 8 x 10½ in. 8 pp. Illustrated. In addition to circuits for panel boards illustrated, a full line of circuits for panel boards having fuses inside branch circuit switches is also listed.

Panel Boards and Cabinets. Bulletin No. 47942. 8 x 10½ in. 16 pp. Illustrated. This bulletin covers the ever increasing demand for devices that provide maximum safety to the operator.

Narrow-Unit Panelboards (Safety Type). Pamphlet. 8 x 10½ in. 4 pp. Illustrated. Describes latest Sprague Panel Board, very narrow, but complete.

Varnum Door Engine Company, 949 West 16th St., Los Angeles, Calif.

Varnum Electric Door Engines. Booklet. 5 x 7¾ in. 16 pp. Illustrated. Descriptive booklet containing illustrations and list of representative institutions now using Varnum Door Engines.

Westinghouse Electric & Mfg. Company, East Pittsburgh, Pa.

Safety Switches. Folder F-4434B. 3½ x 6 in. 2 pp. The 100% Safe Service Entrance Switch.

Meter Service Switches. Booklet F-4484. 3½ x 6 in. 16 pp.

Panel Boards. Catalog 22A. 8½ x 11 in. 16 pp. Illustrated.

What Fans Are For. Booklet F-4520. 3½ x 6 in. 16 pp. Illustrated in color.

ELEVATORS

Kaestner & Hecht Co., Chicago, Ill.

Bulletin 500. Contains 32 pp. Giving general information on passenger elevators for high buildings.

Bulletin 530. Interlocks for Passenger and Freight Elevators.

Bulletin. Signals for Passenger and Freight Elevators.

Otis Elevator Company, 11th Ave. & 26th Street, New York, N. Y.

Otis Push Button Controlled Elevators. Booklet. 6 x 9 in. 56 pp. Illustrated. Detailed description of Otis Push Button Elevators. Their uses in residences, stores, institutions, apartment houses, business offices and banks, etc.

Otis Gravity Spiral Conveyors. Booklet. 6 x 9 in. 56 pp. Illustrated. Gravity spiral conveyors for lowering packaged merchandise, boxed, caged and bundled goods in factories, warehouses, terminal buildings, etc.

Otis Geared and Gearless Traction Elevators of all Types. Descriptive leaflets. 8½ x 11 in. Illustrated. Full details of machines, motors and controllers for these types.

Escalators. Booklet. 8½ x 11 in. 22 pp. Illustrated. Describes use of escalators in subways, department stores, theaters and industrial buildings. Also inclined elevators and dock elevators.

Richards-Wilcox Mfg. Co., Aurora, Ill.

Elevators. Booklet. 8½ x 11 in. 24 pp. Illustrated. Describes complete line of "Ideal" elevator-door hardware and checking devices, also automatic safety devices.

Sedgwick Machine Works, 151 West 15th Street, New York.

Catalog and descriptive pamphlets. 4¼ x 8¼ in. 70 pp. Illustrated. Descriptive pamphlets on hand power freight elevators, sidewalk elevators, automobile elevators, etc.

FENCES

The Stewart Iron Works Company, Cincinnati, Ohio.

Book of Designs "B." 9 x 12 in. 80 pp. Illustrated. Book of designs illustrated from photographs of ornamental iron fence and entrance gates erected by us. Valuable to architects.

FIRE DOORS —See Doors, Windows and Trim, Metal

FIREPLACE EQUIPMENT

Covert Co., H. W., 137 E. 46th Street, New York, N. Y.

Hints on Fireplace Construction. Catalog. 5⅝ x 8½ in. 11 pp. Illustrated. Diagrams of construction and installation of Covert "Improved" and "Old Style" Dampers and Smoke Chambers. Also illustrations of Covert brass and wrought iron Fireplace Fittings.

FLOORING

Armstrong Cork & Insulation Co., 132 24th Street, Pittsburgh, Pa.

Linotile Floors. Catalog. 6 x 9 in. 40 pp. Color plates. Describes Linotile, a composition of ground cork, wood flour, linseed oil and various gums and pigments in tile form.

Armstrong's Cork Tile. Revised Edition. Booklet. 24 pp. 5 x 7 in. Illustrated in color. Contains complete specifications.

Armstrong Cork Co. (Linoleum Dept.), Lancaster, Pa.

Armstrong's Linoleum Floors. Catalog. 8½ x 11 in. 54 pp. Color plates. A technical treatise on linoleum, including table of gauges and weights and specifications for installing linoleum floors.

Decorative Floors. Booklet. 11¼ x 15 in. 16 pp. Color plates.

Armstrong's Linoleum Pattern Book, 1923. Catalog. 3½ x 6 in. 168 pp. Color plates. Reproductions in color of all patterns of linoleum and cork carpet in the Armstrong line.

Quality Sample Book. Three books. 3½ x 5¾ in. Showing all gauges and thicknesses in the Armstrong line of linoleum and cork carpets.

Detailed Directions for Laying and Caring for Linoleum. Handbook. 5 x 7 in. 48 pp. Instructions for linoleum layers and others interested in learning most satisfactory methods of laying and taking care of linoleum.

Business Floors. Booklet. 6 x 9 in. 48 pp. Illustrated in color. Explains use of linoleum for offices, stores, etc., with reproductions in color of suitable patterns, also specifications and instructions for laying.

Carter Bloxonend Flooring Co., Long Bldg., Kansas City, Mo.

Bloxonend Flooring. Booklet. 3¼ x 6¼ in. 20 pp. Illustrated. Describes uses and adaptability of Bloxonend Flooring to concrete, wood or steel construction, and advantages over loose wood blocks.

Specification Sheet. 4 pp. 8½ x 11 in. Illustrated. Standard Specifications in convenient form for Architects and Engineers.

Lateral Nailing Specification. Folder. 8½ x 3¾ in. 4 pp. Illustrated. Shows how this method of nailing eliminates embedded sleepers, wood sub-floor or nailing strips.

What's in a Name? Folder. 8½ x 11 in. Illustrated. Enumerates advantages of a heavy service flooring that lays smooth and stays smooth.

The Marbleloid Co., 461 Eighth Ave., New York, N. Y.

The Universal Flooring for Modern Buildings. Booklet. 6¾ x 9¾ in. 32 pp. Illustrated. Describes uses and contains specifications for Marbleloid flooring, base, wainscoting, etc.

Marbleloid Flooring for Hospitals. Bulletin. 8½ x 11 in. 4 pp. Illustrated. Describes the especial features of this composition floor for hospital buildings.

Marbleloid Specifications. Booklet. 8½ x 11 in. 4 pp. Illustrated.

Marbleloid Flooring for Schools. Bulletin. 8½ x 11 in. 4 pp. Illustrated. Describes special features of this composition floor for school buildings.

Thos. Moulding Brick Company, 133 West Washington St., Chicago, Ill.

T-M-B Mastic Flooring. Catalog. 6 x 9¼ in. 16 pp. Illustrated. Includes specifications also.

Muller Co., Franklyn R., Waukegan, Ill.

Asbestone Composition Flooring. Circulars. 8½ x 11 in. Description and Specifications.

The Nairn Linoleum Company, 179 Belgrove Drive, Kearny, N. J.

Linoleum. Booklet. 5½ x 8½ in. 68 pp. Illustrated in color. Reproductions in color of Inlaid, Printed, Plain and Battleship Linoleum; also Cork Carpets and Felt Base Floor Coverings.

Oak Flooring Advertising Bureau, 1057 Ashland Block, Chicago, Ill.

Modern Oak Floors. Booklet. 6⅛ x 9¼ in. 24 pp. Illustrated. A general book that tells the complete story on Oak Flooring.

Oak Flooring, How and Where to Use it. Booklet. 3⅛ x 6¼ in. 16 pp. Illustrated. A small, technical book showing the general rules, standard thickness and widths, how to lay, finish and care for oak floors.

FLOOR HARDENERS

General Chemical Company, 40 Rector Street, New York City.

Hard-n-tyte Engineering Service. Booklet. 16 pp. 7½ x 10½ in. Describes Hard-n-tyte and its uses in connection with surface treatments of concrete with illustrations of specific applications.

The Hard-n-tyte Specification. Folder. 2 pp. 7½ x 10½ in. Gives exact specifications for concrete floor finish.

Sample Bond. 9 x 14½ in. Duplicate of Five Year Guaranty Bond furnished on floors treated with Hard-n-tyte.

FLOOR HARDENERS (CHEMICAL)

Sonneborn Sons, Inc., L., 116 Fifth Ave., New York.

Lapidolith, the liquid chemical hardener. Complete sets of specifications for every building type in which concrete floors are used, with descriptions and results of tests.

FURNACES—See Heating Equipment

FURNITURE

Estey Organ Company, Brattleboro, Vt.

Pipe Organs. Complete specifications and full information furnished to the architect for pipe organ to be installed in any given residence, upon receipt of plans and other particulars.

Hampton Shops, 18 East 50th St., New York, N. Y.

Glimpses from Hampton Exhibits. Brochure. 16 pp. 5 x 7½ in. Illustrated. Shows examples of Hampton work and gives one an idea of their resources. Of interest to the client as well as to the architect.

Kensington Mfg. Company, 14 East 32nd St., New York, N. Y.

Photographs and full description of hand-made furniture in all the period styles furnished promptly in response to a specific inquiry.

Illustrated booklet indicative of the scope, character and decorative quality of Kensington furniture mailed on request.

GLASS CONSTRUCTION

Mississippi Wire Glass, 220 Fifth Avenue, New York.

Mississippi Wire Glass. Catalog. 3⅞ x 8½ in. 32 pp. Illustrated. Covers the complete line.

Plate Glass Mfrs. of America. First National Bank Bldg., Pittsburgh, Pa.

Plate Glass. Booklet. 5¾ x 9¼ in. 12 pp. Describes manufacture and use of plate glass, with sizes.

Anaconda Brass Pipe

to reduce maintenance costs—

From a sketch by
Samuel Chamberlin

Nine story apartment house at 10 East 88th Street, New York, completely equipped with Anaconda Brass Pipe. Architects: Litchfield and Rogers. Plumbing Contractors: W. G. Cornell and Co. Owners: The Almab Corporation.

BY specifying Anaconda Brass Pipe for the water service lines in the nine story apartment house at 10 East 88th Street, New York, Messrs. Litchfield and Rogers, Architects, made certain that the plumbing would be as permanent as the building.

According to W. G. Cornell and Company of New York, the plumbing contractors, it cost only $2,800 more to install Anaconda Brass Pipe than corrodible pipe. Six per cent of the total plumbing cost spent for brass pipe assures permanency and complete freedom from rusty water annoyance, expensive repairs and replacements—a small price for plumbing insurance.

Anaconda Brass Pipe is trademarked and guaranteed. Specify it by name. It costs no more than ordinary brass pipe.

THE AMERICAN BRASS COMPANY

GENERAL OFFICES, WATERBURY, CONN.
MILLS AND FACTORIES
Ansonia, Conn. Torrington, Conn. Waterbury, Conn. Buffalo, N. Y. Kenosha, Wis.
OFFICES AND AGENCIES
New York Philadelphia Boston Providence Pittsburgh Cleveland
Cincinnati Detroit Chicago St. Louis San Francisco
In Canada: ANACONDA AMERICAN BRASS LIMITED: New Toronto, Ontario

SELECTED LIST OF MANUFACTURERS' PUBLICATIONS — *Continued from page 70*

GRANITE—See Stone, Building

HARDWARE

Cutler Mail Chute Company, Rochester, N. Y.

Cutler Mail Chute Model F. Booklet. 4 x 9¼ in. 8 pp. Illustrated.

McKinney Mfg. Co., Pittsburgh, Pa.

McKinney Complete Garage Hardware Sets. Catalog. 6¾ x 10 in. 20 pp. Illustrated. Describes full line of complete garage hardware sets for all kinds of entrances, with views of typical entrances and sketches.

McKinney Hinges and Butts. General Catalog. 6¾ x 10 in. Illustrates and describes complete line of McKinney wrought builders' hardware products, including hinges, butts, door hangers and track, latches, garage hardware and specialties.

Vonnegut Hardware Co., Indianapolis, Ind.

Von Duprin Self-Releasing Fire Exit Devices. Catalog. 12F 8 x 11 in. 41 pp. Illustrated.

"Saving Lives." Booklet. 3¼ x 6 in. 16 pp. Illustrated. A brief outline why Self-Releasing Fire Exit Devices should be used.

HEATING EQUIPMENT

American District Steam Company. North Tonawanda, N. Y.

Adsco Heating. Bulletin No. 158. 6¼ x 9¼ in. 16 pp. Illustrated. Describes Adsco System of Atmospheric Steam Heating, its principle and operation.

Catalog No. 21-AF. 6 x 9 in. 200 pp. Illustrated. Lists and describes the full line of equipment and devices manufactured for use on underground and interior steam mains, expansion joints, steam meters, condensation meters, traps, flange fittings, angle fittings, manhole curbs, alignment guides, etc.

Clarage Fan Company, Kalamazoo, Mich.

Catalog No. 52. 8½ x 11 in. 84 pp. Illustrated. Describes Clarage Kalamazoo Multiblade Fans and Heaters for use in schools, churches, hospitals and industrial plants. Engineering data, capacity tables and dimensions included.

James B. Clow & Sons, 534 S. Franklin Street, Chicago, Ill.

Gasteam. Catalog. 6 x 9 in. 16 pp. Illustrated. New radiator using gas for fuel.

Excelso Specialty Works, 119 Clinton St., Buffalo, N. Y.

Excelso Water Heater. Booklet. 12 pp. 3 x 6 in. Illustrated. Describing the new Excelso method of generating domestic hot water in connection with heating boilers. (Firepot Coil eliminated.)

Gorton & Lidgerwood Co., 96 Liberty Street, New York, N. Y.

Gorton Self-Feeding Boilers. Booklet. 4¼ x 7¼ in. 32 pp. Illustrated. Descriptions, specifications and prices.

Johnson Service Company, 149 Michigan St., Milwaukee, Wis.

Regulation of Temperature and Humidity. Booklet. 11¼ x 8½ in. 64 pp. Illustrated. Describes Johnson system of pneumatic, automatic regulation of temperature and humidity, and illustrates thermostats, valves, air compressors, dampers and other parts.

Johnson Electric Thermostats, Valves and Controllers. Booklet. 6⅛ x 3½ in. 24 pp. Illustrated. Excellent plates showing electric thermostats and controllers.

Kelsey Heating Company, James St., Syracuse, N. Y.

Booklet No. 5. 4 x 9 in. 32 pp. Illustrated. A dealers' booklet showing the Kelsey Warm Air Generator Method of warming and distributing air. Gives dimensions, heating capacities, weights, kind of coal recommended, and shows the mechanical and gravity system of heating homes, churches and schools.

Monroe Pipeless Booklet. 4½ x 8 in. 20 pp. Illustrated.

Monroe Tubular Heater. Booklet. 4½ x 8 in. 20 pp. Illustrated. General Booklet giving capacities, dimensions, weights, etc.

Syracuse Pipeless Booklet. 4½ x 8 in. 12 pp. Illustrated. General Booklet, giving sizes and capacities.

Kewanee Boiler Co., Kewanee, Ill.

Kewanee on the Job. Catalog. 8½ x 11 in. 80 pp. Illustrated. Showing installations of Kewanee boilers, water heaters, radiators, etc.

Catalog No. 73. 6 x 9 in. 35 pp. Illustrated. Describes Kewanee steel power boilers with complete specifications.

Minneapolis Heat Regulator Company, Minneapolis, Minn.

The Heart of the Heating Plant. Catalog. 6 x 9 in. 20 pp. Illustrated. Describing the Minneapolis Heat Regulator, its construction, application and operation for the automatic control of temperature where coal, gas, fuel oil or street steam is used.

Utica Heater Company, Utica, N. Y.

Imperial Round and Square Boilers and Supplies. Catalog. 3½ x 6½ in. Gives complete data on small heaters.

Special Folders. 8½ x 11 in. "Warmth and Comfort," describing the scientifically correct NEW IDEA pipeless furnaces. "SUPERIOR Warm Air Pipe Furnaces," a standard line of heating equipment for over forty years. "SUPER–SMOKELESS Pipe and Pipeless Furnaces," a new and remarkably efficient warm air heater, burning cheap soft coal without smoke—utilizing the principle of the Bunsen Burner.

"Imperial Sectional Square Boilers," for hard coal heating of all types of buildings.

Utica Imperial SUPER–SMOKELESS Boiler. Catalog. 8½ x 11 in. Consists of the following seven bulletins, either loose or bound together: (1) School Heating Bulletin. (2) Public Building Bulletin. (3) Theater Heating Bulletin. (4) Churches and Religious Institutions. (5) Residences, Apartments and Hotels. (6) Offices, Industrial Buildings and Garages. (7) Technical Bulletin describing patented Bunsen Burner design and construction of the SUPER-SMOKELESS BOILER, which burns the cheapest grades of soft coal smokelessly and operates equally well with hard coal, coke or fuel oil.

HEAT REGULATORS—See Heating Equipment

HOISTS

Gillis & Geoghegan, 544 West Broadway, New York.

Hoists for Industrial Plants. Booklet. 6 x 8¾ in. 8 pp. Illustrated. Labor saving service in the lifting or lowering of lighter loads, through the use of G & G Telescopic and Non-telescopic Hoists.

Removing Ashes. Booklet. 6 x 8¾ in. 6 pp. Illustrated. Removing ashes from boiler room directly to wagon by electrically operated Telescopic Hoists.

HOLLOW TILE—See Tile, Hollow

INCINERATORS

The Kerner Incinerator Company, 1029 Chestnut St., Milwaukee, Wis.

The Kernerator. Booklet. 5½ x 9¼ in. 40 pp. Illustrated. Describes principle and design of the Kernerator, guarantee and service, also gives illustrations of buildings where it has been installed and testimonials.

Sanitary Elimination of Household Waste. Booklet. 4 x 9 in. 16 pp. Illustrated. Shows process, installations and advantages of the Kernerator.

Sanitary Disposal of Waste in Hospitals. Booklet. 4 x 9 in. 12 pp. Illustrated. Shows how this necessary part of hospital service can be taken care of by the Kernerator.

INSULATION

Bishopric Manufacturing Co., 103 Este Ave., Cincinnati, Ohio.

For All Time and Clime. Booklet. 6 x 9 in. 48 pp. Illustrated. Describing the use of Bishopric stucco base and Bishopric plaster base.

Philip Carey Co., The, Cincinnati, Ohio.

Carey Asbestos and Magnesia Products. Catalog. 6 x 9 in. 72 pp. Illustrated.

Johns-Manville, Inc., Madison Ave. and 41st St., New York, N. Y.

Johns-Manville Service to Power Users. Catalog. 8½ x 11 in. 150 pp. Illustrated. Contains valuable data on all forms of insulations, packings, steam traps, high temperature cements, brake locks and linings, also general technical data.

United States Mineral Wool Co., 280 Madison Ave., New York, N. Y.

The Uses of Mineral Wool in Architecture. Booklet. 5¼ x 6⅝ in 24 pp. Illustrated. Describes properties of mineral wool as insulation against heat, frost, sound. Specifications and section drawings for use as a fireproofing. Rule for estimate and cost.

KITCHEN EQUIPMENT

Colt's Patent Fire Arms Mfg. Company, Hartford, Conn.

AUTOSAN Dish and Silver Cleaning Machines. Booklets. 6 x 9 in. Describing rotary table type and conveyor type machines.

Wm. M. Crane Company, 16–20 West 32nd St., New York, N. Y.

VULCAN Gas Ranges and Appliances. Booklet. 5 x 8 in. 50 pp. Illustrated. Describes complete line, including VULCAN SMOOTH-TOP Compact Cabinet Gas Ranges for kitchens in the home.

VULCAN Gas Equipment for Hotels, Hospitals, Restaurants, etc. Booklet. 5 x 8 in. 45 pp. Illustrated. Equipment for heavy-duty cooking requirements, with information of value to architects in planning kitchens.

Pick & Company, Albert, 208 W. Randolph St., Chicago, Ill.

School Cafeterias. Portfolio. 17 x 11 in. 44 pp. Illustrated. An exhaustive study of the problems of school feeding, with copious illustrations and blue-prints. Very valuable to the architect.

Hotel, Apartment Building, Club and Institution Installations. Portfolio. 17 x 11 in. 100 pp. Shows, mostly by plates, how the Albert Pick Company equips hotels completely from top to bottom.

Equipment for Cafeterias, Lunch Rooms, Restaurants, and Dining Rooms. Portfolio. 17 x 11 in. 86 pp. Illustrated. The last word in Cafeteria equipment to meet all requirements.

LATH, METAL AND REINFORCING

National Steel Fabric Company, Pittsburgh, Pa.

Folder. 8½ x 11 in. 6 pp. Illustrated. Describes National Stucco-Plaster Reinforcement, a base for exterior stucco and interior plastering, composition flooring, etc., with photographs and drawings.

North Western Expanded Metal Co., 934 Old Colony Building, Chicago, Ill.

Designing Data. Catalog. 6 x 9 in. 94 pp. Illustrated. Describes most efficient use of Econo Expanded Metal Reinforcing.

Formless Concrete Construction. Catalog. 6 x 9 in. 80 pp. Illustrated. Describes use of T-Rib Chanelath, a form and reinforcing for concrete.

LEADERS AND GUTTERS

Copper & Brass Research Assn., 25 Broadway, New York, N. Y.

Copper Roofing. Booklet. 8½ x 11 in. 32 pp. Illustrated. Gives information regarding weights of various roofing materials. Describes up-to-date practice and methods of laying copper roofs; decorative effects and how to obtain them. Gives specifications and details. Flashings, reglets, gutters and leaders, cornices and copper-covered walls.

MAIL CHUTES

Cutler Mail Chute Company, Rochester, N. Y.

Cutler Mail Chute Model F. Booklet. 4 x 9¼ in. 8 pp. Illustrated.

MANTELS

Arnold & North, Inc., 124 East 41st St., New York, N. Y.

Booklet. 5 x 6 in. Contains photographic reproductions of a variety of old English and Colonial mantelpieces with complete information as to sizes and prices.

Arthur Todhunter, 414 Madison Ave., New York, N. Y.

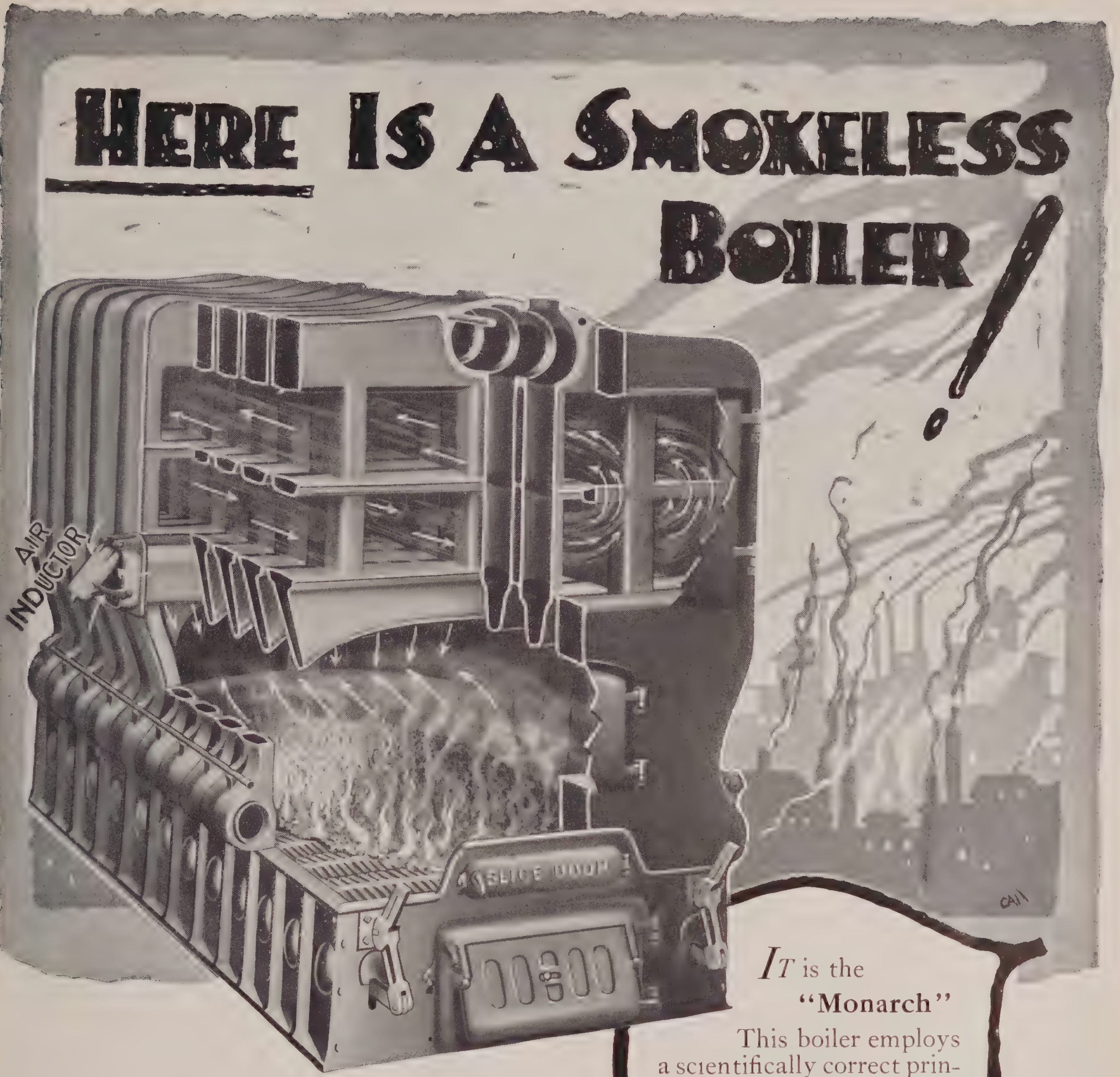
Mantels and Fireplace Equipment. Booklet. 8½ x 11 in. Illustrated. Separate sheet plates showing mantels installed and furnished, also andirons and grates grouped with suitable pieces, also lanterns, weather-vanes and hand-wrought hardware. All sizes and descriptions given on each plate.

MARBLE

The Georgia Marble Company, Tate, Ga. New York office, 1328 Broadway.

Why Georgia Marble is Better. Booklet. 3⅝ x 6 in. Gives analysis, physical qualities, comparison of absorption with granites, opinions of authorities, etc.

Convincing Proof. Booklet. 3⅝ x 6 in. 8 pp. Classified list of buildings and memorials in which Georgia Marble has been used, with names of Architects and Sculptors.



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The emission of smoke is a sure indication of imperfect combustion. It is also wasteful, a nuisance and can be done away with. To this end, many cities have passed anti-smoke ordinances. Monarch Up-Draft Smokeless boilers are so built that they absolutely eliminate all smoke, even with the cheapest grades of soft coal. Before you install any heating plant be sure to investigate the Monarch. We have just published an interesting catalogue in which the Monarch Up-Draft Smokeless boiler is described. Write for it.

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CLEVELAND, Rose Building *Factory:* MEADVILLE, PA.

SELECTED LIST OF MANUFACTURERS' PUBLICATIONS — *Continued from page 72*

MARBLE—Continued

Tompkins-Kiel Marble Company, 505 Fifth Ave., New York, N. Y.

Reproductions in natural colors of imported and domestic marbles and stone for interior and exterior uses.

Bulletins, 9¾ x 12¾ in., illustrating buildings of various types in which Tompkins-Kiel Marble Company's imported and domestic marbles and stone have been used.

Vermont Marble Company, Adv. Dept., Proctor, Vt.

The Book of Vermont Marble. Booklet. 8½ x 11 in. 68 pp. Illustrated. A reference book for architects, describing various kinds of Vermont Marble, with illustrations and details.

Marble Banks and Modern Business. Booklet. 7¾ x 10½ in. 48 pp. Illustrated. Contains many pictures of important Vermont Marble bank work, with certain tests and analyses relating to the product.

METAL LATH—See Lath, Metal and Reinforcing

METALS

American Brass Company, Waterbury, Conn.

Illustrated pamphlet describes the use and adaptability of extruded architectural shapes to meet the architect's design.

American Sheet & Tin Plate Co., Frick Building, Pittsburgh, Pa.

Reference Book. Pocket Ed. 2½ x 4½ in. 168 pp. Illustrated. Covers the complete line of Sheet and Tin Mill Products.

Apollo and Apollo-Keystone Galvanised Sheets. Catalog. 8½ x 11 in. 20 pp. Illustrated.

Research on the Corrosion Resistance of Copper Steel. Booklet. 8½ x 11 in. 24 pp. Illustrated. Technical information on results of atmospheric corrosion tests of various sheets under actual weather conditions.

Facts Simply and Briefly Told. Booklet. 8½ x 11 in. 16 pp. Illustrated. Non-technical statements relating to Keystone Copper Steel.

Black Sheets and Special Sheets. Catalog. 8½ x 11 in. 28 pp. Illustrated. Describes standard grades of Black and Uncoated Sheets, together with weights, bundling tables, etc.

Bright Tin Plates. Catalog. 8½ x 11 in. 16 pp.

Bridgeport Brass Company, Bridgeport, Conn.

Seven Centuries of Brass Making. Booklet. 10½ x 8 in. 78 pp. Illustrated in color. A brief history of the ancient art of Brass Making and its early (and even recent) method of production—contrasted with that of the Electric Furnace Process—a twentieth century achievement of the Bridgeport Brass Company.

Tested High-Speed Brass Rod. Booklet. 10½ x 8 in. 16 pp. Illustrated. Short treatise on the manufacture of Brass Rod for use in Screw Machines, with particular reference to improvements originated by the Bridgeport Brass Company.

Copper & Brass Research Assn., 25 Broadway, New York, N. Y.

Copper Roofing. Booklet. 8½ x 11 in. 32 pp. Illustrated. Gives information regarding weights of various roofing materials. Describes up-to-date practice and methods of laying copper roofs; decorative effects and how to obtain them. Gives specifications and details. Flashings, reglets, gutters and leaders, cornices and copper-covered walls.

METAL TRIM—See Doors and Trim, Metal

MILLWORK

Curtis Companies Service Bureau, Clinton, Iowa.

Architectural Interior and Exterior Woodwork, Standardized. Book. 9 x 11½ in. 240 pp. Illustrated. This is an Architects' Edition of the complete catalog of Curtis Woodwork, as designed by Trowbridge & Ackerman. Contains many color plates.

Curtis Companies Service Bureau, Clinton, Iowa.

Better Built Homes, Vols. XV–XVIII incl. Booklet. 9 x 12 in. 40 pp. Illustrated. Designs for houses of five to eight rooms, respectively, in several authentic types, by Trowbridge & Ackerman, architects for the Curtis Companies.

Curtis Companies Service Bureau, Clinton, Iowa.

Curtis Details. Booklet. 19½ x 23½ in. 20 pp. Illustrated. Complete details of all items of Curtis woodwork, for the use of architects.

MORTAR COLORS

Clinton Metallic Paint Co., Clinton. N. Y.

Color Harmony in Brick Work. Folder. 6⅜ x 3¾ in. Illustrated. Describes use of Clinton Mortar Colors, with illustrations in colors.

PAINTS, STAINS, VARNISHES AND WOOD FINISHES

Boston Varnish Co., Everett Station, Boston 49, Mass.

The Inviting Home. Booklet. 5½ x 8 in. 16 pp. Illustrations in colors of attractive interiors.

Set of Twelve Measured Drawings. 8½ x 11 in.

Kyanize—Its Important Place in Recent Eastern Architecture. Booklet. 6 x 9 in. 16 pp. Varnish and Enamel Specifications.

Cabot, Inc., Samuel, Boston, Mass.

Cabot's Creosote Stains. Booklet. 4 x 8½ in. 16 pp. Illustrated.

The Hockaday Company, 1823 Carroll Ave., Chicago, Ill.

Paint Mileage. Book. 8 x 10½ in. 56 pp. Illustrated. A reference book on interior painting. Describes use of paint over all sorts of surfaces, with illustrations of buildings where Hockaday has been specified. Hockaday service explained.

Solving Your Paint Problems. Booklet. 8½ x 11 in. 44 pp. Illustrated. Describes use of Hockaday Paint in Industrial Buildings, particularly in textile mills. Details of Hockaday service and specifications.

Martin Varnish Co., 2500 Quarry St., Chicago, Ill.

Architectural Specifications. Booklet. 8½ x 11 in. 20 pp. Illustrated. Complete guide for Architects in specifying Martin Varnish Products.

Your Floors. Booklet. 5 x 7 in. 20 pp. Illustrated. Explains fully how to finish all kinds of floors and woodwork with Martin's Pure Varnish.

De Luxe Enamel. Folder. 3½ x 7 in. 8 pp. Illustrated. Describes Martin's Enamel and shows color-card.

Finishes. Booklet. 3¼ x 6¼ in. 16 pp. Illustrated in colors. Copious illustrations in color and details of all kinds of wood-finishing.

PAINTS, STAINS, VARNISHES AND WOOD FINISHES—Cont'd

National Lead Company, 111 Broadway, New York, N. Y.

Handy Book on Painting. Book. 5½ x 3¼ in. 100 pp. Gives directions and formulas for painting various surfaces of wood, plaster, metal, etc., both interior and exterior.

Red Lead in Paste Form. Booklet. 6¼ x 3½ in. 16 pp. Illustrated. Directions and formulas for painting metals.

Came Lead. Booklet. 8¾ x 6 in. 12 pp. Illustrated. Describes various styles of lead cames.

Cinch Anchoring Specialties. Booklet. 6 x 3½ in. 20 pp. Illustrated. Describes complete line of expansion bolts.

The Ripolin Company, Cleveland, Ohio

Ripolin Specification Book. 8 x 10¼ in. 12 pp. Complete specifications and general instructions for the application of Ripolin, the original Holland enamel paint. Also directions for proper finishing of wood, metal, plaster, concrete, brick and other surfaces.

Ruberoid Co., The (formerly the Standard Paint Co.), 95 Madison Avenue, New York, N. Y.

Preservative Coatings. Booklet. 6 x 9 in. 15 pp. Illustrated. Presents in a concise manner the properties and uses of the Ruberoid Company's various paint preparations.

Smith & Co., Edward, P. O. Box 76, City Hall Station, New York, N. Y.

Architect's Hand Book. 4¾ x 7½ in. 24 pp. Specifications and suggestions for painting, varnishing, enameling, etc.

Sonneborn Sons, Inc., L., Dept. 4, 116 Fifth Avenue, New York.

Paint Specifications. Booklet. 8½ x 10¾ in. 4 pp.

PARTITIONS

Improved Office Partition Company, 25 Grant St., Elmhurst, L. I.

Telesco Partition. Catalog. 8¼ x 11 in. 14 pp. Illustrated. Shows typical offices laid out with Telesco partitions, cuts of finished partition units in various woods. Gives specifications and cuts of buildings using Telesco.

Detailed Instructions for erecting Telesco Partitions. Booklet. 24 pp. 8½ x 11 in. Illustrated. Complete instructions, with cuts and drawings, showing how easily Telesco Partition can be erected.

Richards-Wilcox Mfg. Co., Aurora, Ill.

Partitions. Booklet. 7 x 10 in. 32 pp. Illustrated. Describes complete line of track and hangers for all styles of sliding, parallel, accordion and flush door partitions.

The J. G. Wilson Corporation, 11 East 36th St., New York, N. Y.

Folding Partitions. Booklet. 8½ x 11 in. 16 pp. Illustrated. Covers the field of folding partitions for churches, schools, hotels, clubs and public institutions.

Rolling Partitions, Hygienic and Disappearing Door Wardrobes. Booklet. 6 x 9 in. 32 pp. Illustrated. Describes rolling partitions, particularly in churches and schools, and wardrobes as installed in schools and public institutions.

United States Gypsum Company, 205 West Monroe St., Chicago, Ill.

Pyrobar Partition Tile. 8½ x 11 in. 32 pp.

PIPE

American Brass Company, Waterbury, Conn.

Bulletin B-1, "Brass Pipe for Water Service." 8½ x 11 in. 28 pp. Illustrated. Gives schedule of weights and sizes (I. P. S.) of seamless brass and copper pipe, shows typical installations of brass pipe, and gives general discussion of the corrosive effect of water on iron, steel and brass pipe.

Bridgeport Brass Company, Bridgeport, Conn.

Bulletin No. 15. Brass Pipe and Piping. Booklet. 8 x 10½ in. 48 pp. Illustrated. When and how to use Brass Pipe. Brass Pipe compared with iron and steel pipe for hot water service. Corrosion. Description of manufacture of Bridgeport Plumrite Brass Pipe.

A. M. Byers Company, 235 Water St., Pittsburgh, Pa.

Bulletin 26-A. "What Is Wrought Iron?" 8 x 10¾ in. 40 pp. Illustrated. Descriptions of materials and processes employed in manufacturing Byers genuine wrought iron pipe. Factors influencing corrosion. Gives table of pipe sizes, weights, dimensions, tests, etc., and tabulated records of the life of iron and steel pipe in various kinds of service.

Bulletin 30. An Investigation of Pipe Corrosion in Hot Water Service. 8 x 10¾ in. 20 pp. Illustrated. Shows service records of iron, steel and brass pipe used for hot and cold water supply lines in 129 Pittsburgh Apartment Buildings.

Bulletin 32. Corrosion of Wrought Iron, Cast Iron and Steel Pipe in House Drainage Systems. 8 x 10¾ in. 32 pp. Illustrated. Data obtained through investigations conducted in New York and Chicago by Dr. Wm. P. Gerhard, C.E., and Thomas J. Claffy, Asst. Chief San. Inspector, city of Chicago.

Bulletin 38. The Installation Cost of Pipe. 32 pp. 8 x 10¾ in. Illustrated. Cost analyses of 20 different pipe installations, in power and industrial plants, office buildings, hotels, residences, etc.

Clow & Sons, James B., 534 S. Franklin Street, Chicago, Ill.

Catalog "A." 4 x 6½ in. 706 pp. Illustrated. Shows a full line of steam, gas and water works supplies.

National Tube Co., Frick Building, Pittsburgh, Pa.

"National" Bulletin No. 2. Corrosion of Hot Water Pipe. (8½ x 11 in. 24 pp.) Illustrated. In this bulletin is summed up the most important research dealing with hot water systems. The text matter consists of seven investigations by authorities on this subject.

"National" Bulletin No. 3. The Protection of Pipe Against Internal Corrosion. (8½ x 11 in. 20 pp.) Illustrated. Discusses various causes of corrosion and details are given of the deactivating and deaerating systems for eliminating or retarding corrosion in hot water supply lines.

"National" Bulletin No. 25. "National" Pipe in Large Buildings. 8½ x 11 in. 88 pp. This bulletin contains 254 illustrations of prominent buildings of all types, containing "National" Pipe and considerable engineering data of value to architects, engineers, etc.

Modern Welded Pipe. Book of 88 pages (8½ x 11 in.), profusely illustrated with halftone and line engravings of the important operations in the manufacture of pipe.

THE STEEL HEART OF PLASTER
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METAL LATH

LITTLE wonder that plaster applied over KNO-BURN remains firm, smooth and FREE FROM CRACKS. The wet mortar curling through the tiny meshes (over 15,000 in every sheet) forms countless "rivets"—a clinch that even California earthquakes couldn't break.

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1234 Old Colony Bldg. CHICAGO

SELECTED LIST OF MANUFACTURERS' PUBLICATIONS — *Continued from page 74*

PIPE — Continued

Reading Iron Company, Reading, Pa.

Reading Genuine Wrought Iron Pipe in the Making and in Service. Bulletin No. 1. 8½ x 11 in. 32 pp. Illustrated. History of the Reading Iron Company. Origin of wrought iron—description of each process of manufacture of both buttweld and lapweld pipe—Reading Pipe in various fields.

Book of Standards. Booklet. 5 x 7 in. 48 pp. Illustrated. Complete tables showing dimensions, tests and list prices on each of the 552 different kinds of Reading Tubular goods. Two simple tests for distinguishing genuine wrought iron pipe.

The Painted Molecule. Booklet. 4 x 9 in. 8 pp. Illustrated. A brief, non-technical description of the reasons for the longer life of Reading Iron Pipe, with instances of actual service.

The Ultimate Cost. Booklet. 5¼ x 7¼ in. 24 pp. Illustrated in two colors. A comparison in actual figures of the initial cost and the ultimate cost of plumbing and heating systems in several kinds of homes.

PLUMBING EQUIPMENT

American Brass Company, Waterbury, Conn.

Benedict Nickel. Illustrated pamphlet descriptive of Benedict Nickel White Metal for high-grade plumbing fixtures.

Bridgeport Brass Company, Bridgeport, Conn.

Plumbing Supplies. Booklet. 10½ x 8 in. 20 pp. Illustrated. Describes a few of the different plumbing supplies manufactured by the Bridgeport Brass Company.

Brunswick-Balke-Collender Co., 623 S. Wabash Avenue, Chicago, Ill.

Whale-bone-ite Seat. Booklet. 3½ x 6¼ in. 4 pp. Illustrated.

Whale-bone-ite Seat. Booklet. 3½ x 6¼ in. 8 pp. Illustrated.

Clow & Sons, James B., 534 S. Franklin Street, Chicago, Ill.

Catalog "M." 9¼ x 12 in. 184 pp. Illustrated. Shows complete line of plumbing fixtures for Schools, Railroads and Industrial Plants.

Crane Company, 836 S. Michigan Avenue, Chicago, Ill.

Crane Products in World Wide Use. Catalog. 5 x 9½ in. 24 pp. Illustrated.

Plumbing Suggestions for Home Builders. Catalog. 3 x 6 in. 80 pp. Illustrated.

Plumbing Suggestions for Industrial Plants. Catalog. 4 x 6½ in. 43 pp. Illustrated.

Eljer Company, 15 E. Van Buren St., Chicago, Ill.

The Standardized Sixteen. Booklet. 3¾ x 6¾ in. 16 pp. Illustrated. Describes fully the complete Eljer line of standardized plumbing equipment, with diagrams, weights, measurements and copious illustrations.

Standardized Sixteen. Circular. 3¾ x 6¾ in. 18 pp. Illustrated.

Complete catalog. 3¾ x 6¾ in. 104 pp. Illustrated.

Kohler Co., Kohler. Wis.

Catalog F. 7½ x 10⅝ in. 216 pp. Illustrates and describes the complete line of Kohler trade-marked plumbing ware.

Roughing-In Measurement Binder, 5 x 8 in., containing loose-leaf sheets on all staple fixtures.

Speakman Company, Wilmington, Del.

Speakman Showers and Fixtures. Catalog. 4½ x 7½ in. 250 pp. Illustrated. Catalog of Modern Showers and Brass Plumbing Fixtures, with drawings showing layouts, measurements, etc.

Toned Up In Ten Minutes. Booklet. 7½ x 10½ in. 16 pp. Illustrated. Modern Showers and Washups for Industrial Plants, showing the sanitary method of washing in running water.

Wolff Manufacturing Company, 255 No. Hoyne Ave., Chicago, Ill.

Plumbing Suggestions. Catalog. 3¼ x 6 in. 50 pp. Illustrated. Illustrating, describing and pricing Wolff Quality Plumbing Fixtures for residential installation.

PUMPS

Goulds Mfg. Co., The, Seneca Falls, N. Y.

Set of Twenty Bulletins. 7½ x 10⅝ in. 12 to 32 pp. each. Illustrated. Covers complete line of power and centrifugal pumps for all services.

Catalog "K." 6 x 9 in. 216 pp. Illustrated. Covers complete line of smaller size pumps.

Kewanee Private Utilities Co., 442 Franklin St., Kewanee, Ill.

Bulletin E. 7¾ x 10¼ in. 32 pp. Illustrated. Catalog. Complete descriptions, with all necessary data, on Standard Service Pumps, Indian Brand Pneumatic Tanks, and Complete Water Systems, as installed by Kewanee Private Utilities Co.

RAMPS

Ramp Buildings Corporation, 115 Broad St., New York, N. Y.

The d'Humy Motoramp System of Building Design. Booklet. 8½ x 11 in. 20 pp. Illustrated. Describes the d'Humy system of ramp construction for garages, service buildings, factories, warehouses, etc., where it is desirable to drive motor vehicles or industrial tractors under their own power from floor to floor.

Storage Efficiency of Multi-Floor Garages. Leaflet. 8½ x 11 in. 4 pp. Illustrated. A brief discussion of comparative storage efficiencies of elevator garages, ordinary ramp garages, and d'Humy Motoramp garages.

Visibility. Pamphlet. 8½ x 11 in. 2 pp. Illustrated. Discussion of visibility feature of d'Humy Motoramp System with reference to illustration of one particular installation.

Series of Informal Bulletins on Garage Design. Sent upon request.

REINFORCED CONCRETE

Truscon Steel Company, 250 W. Lafayette Blvd., Detroit, Mich.

Shearing Stresses in Reinforced Concrete Beams. Booklet. 8½ x 11 in. 12 pp.

ROOFING

American Brass Company, Waterbury, Conn.

Service Sheets 43-1 and 43-2, standard specifications and methods of laying copper roofings, flashings, hips, valleys, decks, gutters and leaders.

ROOFING — Continued

American Sheet & Tin Plate Co., Frick Bldg., Pittsburgh, Pa.

Better Buildings. Catalog. 8½ x 11 in. 32 pp. Describes Corrugated and Formed Sheet Steel Roofing and Siding Products, black, painted and galvanized, with directions for application of various patterns of Sheet Steel Roofing in various types of construction.

Copper—Its Effect Upon Steel for Roofing Tin. Catalog. 8½ x 11 in. 28 pp. Illustrated. Describes the merits of high grade roofing tin plates and the advantages of the copper-steel alloy.

"The Testimony of a Decade." Booklet. 8½ x 11 in. 16 pp., with Graphic Chart and illustration showing losses to various Iron and Steel Sheets for roofing, from atmospheric corrosion.

Copper & Brass Research Assn., 25 Broadway, New York, N. Y.

Copper Roofing. Booklet. 8½ x 11 in. 32 pp. Illustrated. Gives information regarding weights of various roofing materials. Describes up-to-date practice and methods of laying copper roofs; decorative effects and how to obtain them. Gives specifications and details. Flashings, reglets, gutters and leaders, cornices and copper-covered walls.

Creo-Dipt Company, 1025 Oliver St., North Tonawanda, N. Y.

Architectural Service Sheets. 8½ x 11 in. Illustrated. Working drawings of construction, with standard specifications for design and construction of same.

Illinois Zinc Company, 332 S. Michigan Ave., Chicago, Ill.

Corrugated Sheets of Pure Rolled Zinc. Booklet. 3⅝ x 8½ in. 8 pp. Illustrated. Facts regarding adaptability of zinc for roofing. Specifications of Corrugated Zinc Sheets. Weights per square. Comparative gauge lists. Table of safe loads.

The Roof That's Always New. Booklet. 3⅝ x 6 in. 12 pp. Illustrated. Story of Illinois Zinc Shingles, their everlasting and artistic qualities. Information regarding a complete zinc roof, shingles, starting piece, valley, ridge and hip piece.

"How to Lay Illinois Zinc Shingles." Leaflet. 8½ x 11 in. 4 pp. Illustrated. Instructions for making a roof of Illinois Zinc Shingles using zinc clad nails, zinc starting piece, hip, zinc valleys, zinc ridge and hip pieces.

Johns-Manville, Inc., Madison Ave. & 41st St., New York, N. Y.

Johns-Manville Building Materials. Book. 8½ x 11 in. 100 pp. Illustrated. A comprehensive catalog of various types of roofing for all forms of construction. Details of wall, floor and ceiling insulation; asbestos wood for fireproof construction; waterproofing, etc.

Johns-Manville Asbestos Shingles. Booklet. 8½ x 11 in. 24 pp. Illustrated. This booklet is profusely illustrated in colors, showing some very artistic blends of asbestos shingles with various types of architecture. Contains many valuable suggestions for the architect.

Ruberoid Co., The (formerly the Standard Paint Co.), 95 Madison Avenue, New York, N. Y.

Instructions for Laying Built-up Roofs. Booklet. 8½ x 11 in. Illustrated.

Ruberoid Facts Worth Knowing. Booklet. 6 x 9 in. 16 pp. Illustrated.

Ruberoid Strip-shingle. Booklet. 3½ x 6¼ in. 16 pp. Illustrated in color.

Ruberoid Unit-shingle. Booklet. 3½ x 6¼ in. Illustrated in color.

United States Gypsum Company, 205 West Monroe St., Chicago, Ill.

Architectural Data Pyrobar Roof Construction. 8½ x 11 in. 48 pp.

SAFETY TREADS

Universal Safety Tread Co., 40 Court St., Boston, Mass.

The Universal Safety Metal Tread. Booklet. 8½ x 11 in. 16 pp. Illustrated. Describes Safety Treads, with lead inserts in steel base, suitable for use on iron, wood or concrete stairs. Also the flat type, with "Alundum" surface, as well as special ladder treads for ships, power-house and engine-room open string stairways.

SASH CHAIN

American Chain Company, Inc., Bridgeport, Conn.

American Sash Chain. Booklet. 3½ x 6 in. 8 pp. Illustrated. Describes and illustrates American Sash Chain and Sash Fixtures.

Smith & Egge Mfg. Co., The, Bridgeport, Conn.

Booklet. 6¾ x 9 in. 42 pp. Illustrated. Covers a complete line of chains, hardware and specialties.

SASH CORD

Samson Cordage Works, Boston, Mass.

Catalog. 3½ x 6¼ in. 24 pp. Illustrated. Covers complete line of rope and cord.

SCREENS

The Higgin Manufacturing Co., Newport, Ky.

Your Home Screened the Higgin Way. Booklet. 8½ x 11½ in. 13 pp. Illustrated in colors. Complete description of Higgin Screens, designed to meet every need.

Rolup Screen Company, 410 East 32nd Street, New York, N. Y.

Hastings Handbook of Window Screens. Booklet. 8 x 11 in. 16 pp. Illustrated. Complete description, with illustrations and diagrams, of Rolup Screens, also specifications, prices and service to architects.

SEWAGE DISPOSAL

Kewanee Private Utilities, 442 Franklin St., Kewanee, Ill.

Specification Sheets. 7¾ x 10¼ in. 40 pp. Illustrated. Detailed drawings and specifications covering water supply and sewage disposal systems.

SHEATHING

Bishopric Manufacturing Co., 103 Este Ave., Cincinnati, Ohio.

For All Time and Clime. Booklet. 6 x 9 in. 48 pp. Illustrated. Describing the use of Bishopric stucco base and Bishopric plaster base.

STEEL DRESSERS

Janes & Kirtland, 133–135 West 44th St., New York, N. Y.

The White House Line. Booklet. 7¾ x 5¼ in. 24 pp. Illustrated. Describes and illustrates in detail WHITE HOUSE Steel Dressers and some of the separate units. Also contains typical layout and list of some of our clients.

Photographs. 5½ x 3½ in. Views of actual installations in private residences, schools, etc., sent on request.

Hockaday Prevents Lime Burning

THE old painter says: "I've been painting walls for about thirty years and when the Hockaday fellow told me that his paint stopped lime burning I just naturally had to smile. I've listened to eloquent speeches by paint salesmen since I was a kid. I've heard claims for paint so strong that only a slight stretch of the imagination was needed to convince one that mortar and stone and steel were only side issues, and that it was really the paint that held the building together.

"So I said, 'Young Fellow, I'm from Missouri. I just finished a job and lime burning has made the wall as spotty as a leopard. Now if your paint REALLY stops lime burning, here's a chance to prove it.' The next day he came and Hockaday'd over those spots. It *did* stop the lime burning! I am convinced that Hockaday is 'Wall Insurance'."

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The binder in Hockaday—the liquid that holds the pigment together and keeps it on the wall—is the only binder that the lime in plaster will not burn or destroy. The action of the lime is neutralized and entirely overcome. This is not a mere claim. It has been proved too often.

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THE HOCKADAY COMPANY
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HOCKADAY

THE WASHABLE PAINT FOR ALL INTERIORS

SELECTED LIST OF MANUFACTURERS' PUBLICATIONS — *Continued from page 76*

STONE, BUILDING

Harrison Granite Company, 200 Fifth Avenue, New York, N. Y.
Harrison Granite Company, Clientele. 3¾ x 8¾ in. 24 pp. Illustrated. A partial list of clients with illustrations of examples of monuments and mausoleums.

Indiana Limestone Quarrymen's Association, Box 766, Bedford, Indiana.
Volume 3. Series A-3. Standard Specifications for Cut Indiana Limestone work. 8½ x 11 in. 56 pp. Containing specifications and supplementary data relating to the best methods of specifying and using this stone for all building purposes.
Vol. 1. Series B. Indiana Limestone Library. 6 x 9 in. 36 pp. Illustrated. Giving general information regarding Indiana Limestone, its physical characteristics, etc.
Vol. 27. Series B. Designs for Houses of Indiana Limestone. 8½ x 11in. 32 pp. Illustrated. Being the best designs submitted in competition for a detached residence faced with Indiana Limestone conducted by *The Architectural Review.*
Volume 4, Series "B." Booklet. New Edition. 8½ x 11 in. 64 pp. Illustrated. Indiana Limestone as used in Banks.

Tompkins-Kiel Marble Company, 505 Fifth Ave., New York, N. Y.
Reproductions in natural colors of imported and domestic marbles and stone for interior and exterior uses.
Bulletins, 9¾ x 12¾ in., illustrating buildings of various types in which Tompkins-Kiel Marble Company's imported and domestic marbles and stone have been used.

STORE FRONTS

Kawneer Co., The, Niles, Mich.
A Collection of Successful Designs. Catalog. 9¼ x 6½ in. 64 pp. Illustrated. Showing by use of drawings and photographs many types of Kawneer Solid Copper Store Fronts.

STUCCO

Bishopric Manufacturing Co., 103 Este Ave., Cincinnati, Ohio.
For All Time and Clime. Booklet. 6 x 9 in. 48 pp. Illustrated Describing the use of Bishopric stucco base and Bishopric plaster base.

STUCCO BASES

Bishopric Manufacturing Co., 103 Este Ave., Cincinnati, Ohio.
For All Time and Clime. Booklet. 6 x 9 in. 48 pp. Illustrated. Describing the use of Bishopric stucco base and Bishopric plaster base.

STUCCO, MAGNESITE

American Magnestone Corporation, Springfield, Ill.
Catalog. 13 pp. Describes the quality, beauty and strength of Magnestone.

American Materials Company, 101 Park Avenue, New York; Weed Street and Sheffield Avenue, Chicago, Ill.
Elastica, the Stucco of Permanent Beauty. Catalog. 8½ x 11 in. 32 pp. Illustrated. Treatise on composition and application of Elastica Stucco.

Muller & Co., Franklyn R., Waukegan, Ill.
Everlastic Magnesite Stucco. Booklet. 8½ x 11 in.

United States Materials Co., Weed Street and Sheffield Avenue, Chicago, Ill. See American Materials Co.

TERRA COTTA

National Terra Cotta Society, 1 Madison Avenue, New York, N. Y.
Standard Construction, Indexed, bound volume. 10½ x 16 in. 90 pp. 70 Illustrations. Standard forms of terra cotta construction with short article.
"The School." 10½ x 13½ in. 34 pp. 92 Illustrations. Types of school buildings with short descriptive articles. Volume I, brochure series.
"Better Banks." 10½ x 13½ in. Illustrated. Banks of various sizes, with short descriptive articles.
"Terra Cotta Defined." 10½ x 13½ in. Complete description of Terra Cotta and its uses.

The New Jersey Terra Cotta Co., Singer Bldg., New York, N. Y.
Store Fronts in Architectural Terra Cotta. Booklet. 8½ x 11 in. 44 pp. Illustrated. Photographs, measured drawings, designs and illustrations of decorative motifs make up an interesting booklet which will be forwarded upon request.

Northwestern Terra Cotta Co., The, 2525 Clybourn Ave., Chicago, Ill.
Booklet. 8¼ x 11 in. 77 pp. Illustrated. Showing in a concise way the usefulness of terra cotta.

THERMOSTATS—See Heating Equipment

TILE, FLOOR AND WALL

Associated Tile Manufacturers, The, Beaver Falls, Pa.
Basic Information. Booklet. 7½ x 10⅝ in. 24 pp. Illustrated. Ask for booklet K-200.
A publication issued for architects, engineers and educators to acquaint them with methods of grading, derivation of sizes and shapes, variety of colors, kind of finishes, nomenclature and ingredients and processes insofar as they lead to a better understanding of the product and its uses.
Basic Specification and Related Documents. Booklet. 7½ x 10⅝ in. 38 pp. Ask for Booklet K-200.
The Basic Specification proper gives in detail the procedure to be followed with respect to any kind of tile installation in connection with practically every type of construction. The Related Documents or work sheets are designed to call attention to optional application methods and materials.
Swimming Pools. Booklet. 8½ x 11 in. 32 pp. Illustrated. Issued for the use of architects and engineers as a handbook on swimming pools and their construction.
Bringing the Crowds to Your Market. Booklet. 8½ x 11 in. 16 pp. Illustrated in color. Shows use of tile for the modern sanitary market.

TILE, FLOOR AND WALL—Continued

Stedman Products Company, South Braintree, Mass.
Six-page folder, 8½ x 10½ in., illustrated in colors, giving complete description of Stedman Naturized Flooring, Tiles, Wainscoting, Sanitary Bases, Stair Treads, etc. Technical data, recommendations and special flooring service.

TILE, HOLLOW

Hollow Building Tile Association, Dept. 1812, Conway Bldg., Chicago, Ill.
Handbook of Hollow Building Tile Construction. 8½ x 11 in. 104 pp. Illustrated. Complete treatise on most approved methods of hollow tile building construction and fireproofing.

National Fire Proofing Co., 250 Federal St., Pittsburgh, Pa.
Standard Wall Construction Bulletin 174. 8½ x 11 in. 32 pp. Illustrated. A treatise on the subject of hollow tile wall construction.
Industrial Housing Bulletin 172. 8½ x 11 in. 14 pp. Illustrated. Photographs and floor plans of typical workingmen's homes.
Natco on the Farm. 8½ x 11 in. 38 pp. Illustrated. A treatise on the subject of fire safe and permanent farm building construction.
Fireproof Buildings of Natco Hollow Tile. Booklet. 8½ x 11 in. 16 pp. Illustrated. Showing the use of Natco Hollow Tile for private residences.

VACUUM CLEANING APPARATUS

The Spencer Turbine Company, Hartford, Conn.
Vacuum Cleaning Apparatus for all purposes. Booklet. 32 pp. Illustrated. Complete information on product, showing prominent buildings equipped with this system.

VALVES

Crane Co., 836 S. Michigan Ave., Chicago, Ill.
No. 50 Steam Pocket Catalog. 4 x 6½ in. 775 pp. Illustrated. Describes the complete line of the Crane Co.

Gorton & Lidgerwood Company, 96 Liberty St., New York, N. Y.
Gorton Quarter-Turn Packing-Lock Valves. Booklet. 4¼ x 7¼ in. 32 pp. Illustrated. Describing a new type of valve for all systems of steam, hot water and vacuum heating.

Jenkins Bros., 80 White Street, New York.
The Valve Behind a Good Heating System. Booklet. 4½ x 7¼ in. 16 pp. Color plates. Description of Jenkins Radiator Valves for steam and hot water, and brass valves used as boiler connections.
Jenkins Valves for Plumbing Service. Booklet. 4½ x 7¼ in. 16 pp. Illustrated. Description of Jenkins Brass Globe, Angle Check and Gate Valves commonly used in home plumbing, and Iron Body Valves used for larger plumbing installations.

VENETIAN BLINDS

Burlington Venetian Blind Co., Burlington, Vt.
Venetian Blinds Booklet. 4½ x 7½ in. 32 pp. Illustrated. Describes the "Burlington" Venetian blinds, method of operation, advantages of installation to obtain perfect control of light in the room.

The J. G. Wilson Corporation, 11 East 36th St., New York, N. Y.
Wilson Venetian Blinds and Awnings. Booklet. 6 x 9 in. 32 pp. Illustrated. Shows typical application of these light-regulating devices.

VENTILATION

Clarage Fan Company, Kalamazoo, Mich.
Catalog No. 52. 8½ x 11 in. 84 pp. Illustrated. Describes Clarage Kalamazoo Multiblade Fans and Heaters for use in schools, churches, hospitals and industrial plants. Engineering data, capacity tables and dimensions included.

WALL BOARDS

Carey Co., The Philip, Cincinnati, Ohio.
Carey Board for Better Building. Catalog. 6 x 9 in. 32 pp. Illustrated.

United States Gypsum Company, 205 West Monroe St., Chicago, Ill.
Walls of Worth. Booklet. 8½ x 11 in. 24 pp. Illustrated. Describes Sheetrock, the fireproof wall board, its advantages and uses.

WARDROBES

W. L. Evans, 700 Block E, Washington, Ind.
Pictures That Talk. Catalog. 8½ x 11 in. 16 pp. Illustrated. Wardrobes, in units, with Evans Vanishing Doors, for schools, hospitals, hotels, office buildings and homes.

WATERPROOFING

Ruberoid Co., The, 95 Madison Ave., N. Y.
Impervite. Circular. 8½ x 11 in. 4 pp. Illustrated. An integral waterproofing compound for concrete, stucco, cement, mortar, etc.

Sandusky Cement Co., Dept. F., Cleveland, Ohio.
Medusa Waterproofing. Booklet. 6¾ x 9 in. 38 pp. Illustrated.

Sonneborn Sons, Inc., L., 116 Fifth Ave., New York.
Pamphlet. 3¾ x 8¾ inches. 8 pp. Explanation of waterproofing principles. Specifications for waterproofing walls, floors, swimming pools and treatment of concrete, stucco and mortar.

WATER PURIFIERS

Wallace & Tiernan Company, Newark, N. J.
Protecting N. Y. Water Supply. Booklet. 10 x 7 in. 24 pp. Illustrated. Describes the chlorinating equipment used for sterilizing N. Y. City water supply; also equipment suitable for sterilizing water supplies of municipalities, industrial plants, private residences, etc.

SARGENT
HARDWARE

St. Mary's Hospital
Rochester, Minn.

C. H. Johnson, Architect
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Buildings of this character present many problems to the architect, not the least of which are those relating to hardware. That our co-operative service has an important part in reaching a satisfactory solution is evidenced by the many hospitals, asylums and other similar institutions that have been equipped with

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This service is available to those architects who would like the benefit of our experience.

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NEW YORK CHICAGO

SARGENT HARDWARE is sold in all cities by representative dealers

SELECTED LIST OF MANUFACTURERS' PUBLICATIONS—*Continued from page 78*

WATER SOFTENERS

Permutit Company, The, 440 Fourth Ave., New York, N. Y.
Permutit-Water softened to No (Zero) Hardness. Booklet. 8½ x 11 in. 32 pp. Describing the original Zeolite process of softening water to zero hardness. An essential for homes, hotels, apartment houses, swimming pools, laundries, textile mills, paper mills, ice plants, etc., in hard water districts.

WEATHER STRIPS

The Higgin Manufacturing Co., Newport, Ky.
Higgin All-Metal Weather Strips. Booklet. 6 x 9 in. 12 pp. Illustrated in colors. Describes various types of Higgin Weather Strips for sealing windows and doors against cold and dust.

WINDOW HARDWARE, CASEMENT

Hoffman Mfg. Co., Andrew, 900 Steger Bldg., Chicago, Ill.
Hoffman Casement Fixtures. Architects' Portfolio. 8½ x 11 in. 30 pp. Loose-leaf. Scale details for mill-work, installation, etc., in new and old work.

Richards-Wilcox Mfg. Co., Aurora, Ill.
Casement Window Hardware. Booklet. 24 pp. 8½ x 11 in. Illustrated. Shows typical installations, detail drawings, construction details, blue-prints if desired. Describes AiR-Way Multifold Window hardware.

WINDOWS, CASEMENT

Crittall Casement Window Co., 2703 East Atwater Street, Detroit, Mich.
Catalog No. 18. 9 x 12 in. 56 pp. Illustrated.

Hoffman Mfg. Co., Andrew, 900 Steger Bldg., Chicago, Ill.
Hoffman Casements. Architects' Portfolio. 8½ x 11 in. 30 pp. Loose-leaf. Scale details for mill-work, installation, etc., in new and old work.

Hope & Sons, Henry, 103 Park Avenue, New York.
Catalog. 12¼ x 18½ in. 30 pp. Illustrated. Full size details of outward and inward opening casements.

International Casement Company, Jamestown, N. Y.
International Casements. Catalog. 8½ x 11 in. 224 pp. Illustrated. Valuable book, containing photographs and measured drawings of all types of buildings, showing casement windows.

David Lupton's Sons Co., Allegheny Ave. and Tulip St., Philadelphia, Pa.
Casements and Double Hung Windows. Catalog. 8½ x 11 in. 44 pp. Illustrated. Shows new Lupton Casements and Double Hung Windows, with profuse illustrations and full details.

WINDOWS, STEEL and BRONZE

Detroit Steel Products Company, Detroit, Mich.
Fenestra Basement Windows. Booklet. 3⅝ x 6¼ in. 16 pp. Illustrated. Describes steel basement windows, their advantages, details and specifications for installation.
Fenestra Reversible Ventilator Windows. Booklet. 8½ x 11 in. 20 pp. Illustrated. Describes the details of this new model window, as well as the variety it offers for attractive architectural design.
Fenestra Counter-Balanced Windows. Catalog. 8½ x 11 in. 111 pp. Illustrated. Details and specifications are thoroughly covered in the Fenestra General Catalog.
Fenestra Industrial Window Walls. Catalog. 8½ x 11 in. 111 pp. Illustrated. Details and specifications, with photographic illustrations, are thoroughly covered in the Fenestra General Catalog.

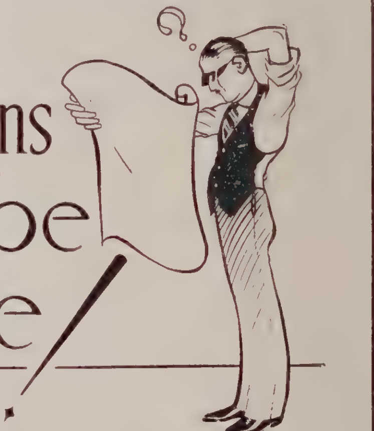
The Kawneer Company, Niles, Mich.
Kawneer Simplex Windows. Catalog. 8½ x 10½ in. 16 pp. Illustrated. Complete information, with measured details, of Kawneer Simplex Weightless Reversible Window Fixtures, made of solid bronze. Shows installations in residences and buildings of all sorts.
Detail Sheets and Installation Instructions. Valuable for architects and builders.

David Lupton's Sons Co., Allegheny Ave. and Tulip St., Philadelphia, Pa.
Lupton Service—Products No. 11. Book. 8½ x 11 in. 192 pp. Illustrated. The full line of Lupton products described and illustrated. Separate chapter on Designing Service. Many new types of steel sash for apartments, hotels, etc., shown.
Catalog No. 110. 8½ x 11 in. 72 pp. Illustrated. A condensed version of the No. 11 or general catalog. The new Lupton Projected Sash completely described.
Air and Light in Machine Shops. Booklet. 6 x 9 in. 42 pp. Illustrated. The proper building layout and selection of the right types of steel sash for best results in daylighting and ventilating in machine shops.

Truscon Steel Company, 250 W. Lafayette Blvd., Detroit, Mich.
Truscon Steel Windows. Catalog. 8½ x 11 in. 80 pp. Illustrated. Contains complete data on all types of Truscon Steel Windows.

WOOD

American Walnut Mfrs. Association, 618 So. Michigan Blvd., Chicago, Ill.
American Walnut. Booklet. 7 x 9 in. 45 pp. Illustrated. A very useful and interesting little book on the use of Walnut in Fine Furniture with illustrations of pieces by the most notable furniture-makers from the time of the Renaissance down to the present.
Real American Walnut Furniture. Folder. 8½ x 11 in. 4 pp. Illustrated. Tells how to identify the genuine and avoid the substitute in buying "Walnut" furniture.



The new Los Angeles Biltmore Hotel, Los Angeles, Calif.—equipped with a Pfaudler Glass Lined Laundry Chute and a Pfaudler Rubbish Chute (unenameled)

Your plans will not be complete

—unless you specify the Pfaudler Glass Lined Laundry Chute. This is the common opinion of architects all over the country, especially architects who do a preponderance of hospital and hotel work. Laundry disposal is so fraught with every possible measure of inconvenience, germ-transmission and labor-cost that a device which will automatically eliminate these difficulties is welcomed. Hence, the popularity of the Pfaudler Chute. *Send for new descriptive booklet*

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The value of Imagination in selecting Good Hardware

MOST people know what they like, *after* a building is erected, but they never know what they like *before* it takes form.

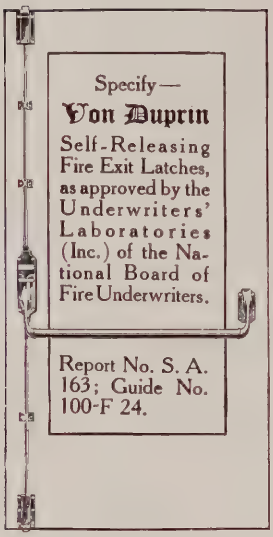
The architect can make himself invaluable to his clients by supplying the imagination necessary for selecting, not merely *Good Hardware*—but Good Hardware of appropriate and distinctive design.

Every home—every building—every owner has an individual character to be expressed. Finding the hardware which harmonizes with this character, is a service which the architect, above all others, is qualified to render. In this we can help.

P. & F. CORBIN SINCE 1849 NEW BRITAIN CONNECTICUT
The American Hardware Corporation, Successor
New York Chicago Philadelphia

Von Duprin

Self-Releasing Fire Exit Latches



Specify—
Von Duprin
Self-Releasing Fire Exit Latches, as approved by the Underwriters' Laboratories (Inc.) of the National Board of Fire Underwriters.

Report No. S. A. 163; Guide No. 100-F 24.

Upon the leader of any industry there rests a double responsibility.

He must maintain the excellence of material and workmanship which carried his product to first place. That is his responsibility to the public.

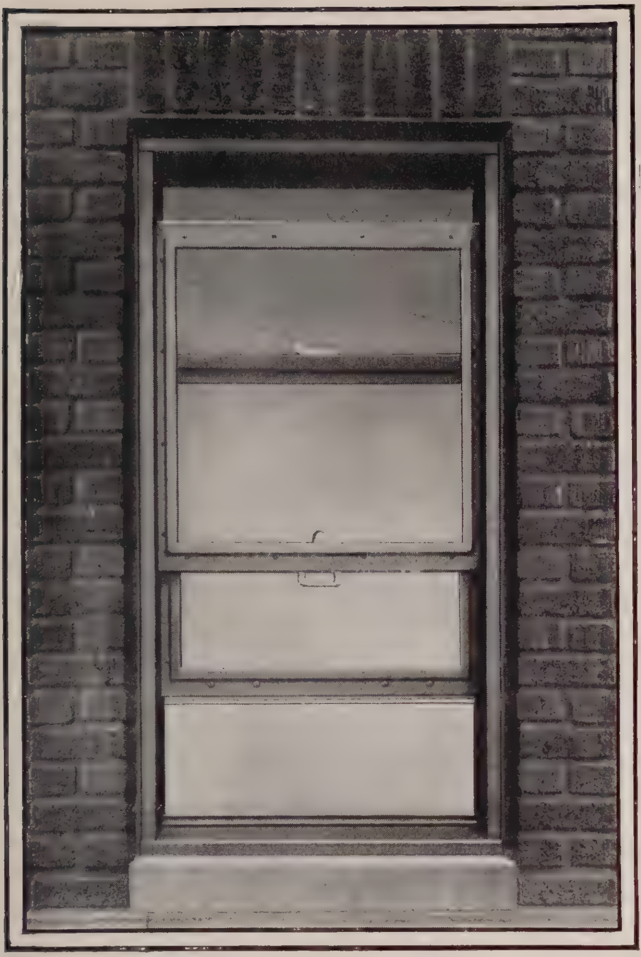
And, even though his product be so good as to be in a non-competitive class, he must continually strive to make it better. That is his responsibility to himself.

You will perhaps be interested in the two major improvements which have been made in **Von Duprin** latches during the past twelve months.

Complete particulars on request. Ask for Catalog 12-F, or see "Sweet's," pages 1323-1327.

VONNEGUT HARDWARE CO.
Indianapolis, Ind.

Masonic Temple
Cleveland, Ohio
Hubbell & Benes Co.
Architects



Announcing

A New Lupton Steel Plate Window

For office buildings, hotels, apartment houses, loft buildings, etc.
Strongly built of heavy gauge steel plate.
Accurately cut and fitted, permitting close contact with free movement.
Sash are assembled by welding, ensuring permanent rigidity.
Frame is strongly put together by bolts.
Double contacts are used at sill and jambs.
No rain can enter weight boxes.
High-grade malleable or solid bronze hardware.
By standardizing on proven details, we are able to offer a window of unusual quality at a moderate price.

DAVID LUPTON'S SONS COMPANY
Witte and Tulip Sts. Philadelphia

*Chicago New York Pittsburgh Boston St. Louis
*Cleveland *Detroit *Buffalo *Atlanta Baltimore
*Warehouses in these cities
Agents in other cities

Canadian Manufacturers: The A. B. Ormsby Co., Ltd., Toronto

Lupton
INVESTMENT VALUE

Double Hung Window
Type B

The "AMERICAN" Saw Tooth, Labor-Saving Sash Pulley.

"American" Sash Pulleys, made of *electrically welded* pressed steel parts, are strong and durable, but nearly 50% lighter than cast pulleys of the same size, and will not break in shipping or handling—a double saving on freight and breakage.

Made with plain, roller or ball bearings and with combination groove in the wheel to take either cord or chain.

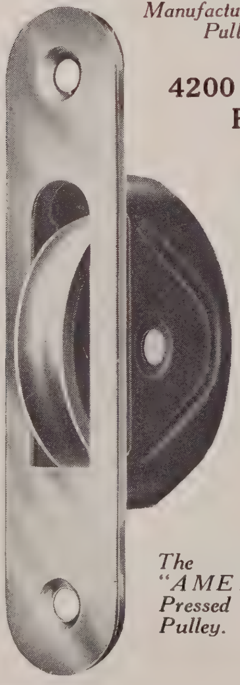
Fully guaranteed.

Write for catalog or samples.

The American Pulley Company

Manufacturers of Steel Split Transmission Pulleys, Steel Sash Pulleys and Pressed Steel Shapes

4200 Wissahickon Avenue
Philadelphia, Pa.



The "AMERICAN" Pressed Steel Sash Pulley.

Easy to Plan
Easy to Build
Easy to Operate

THE satisfaction of installing garage doors with the McKinney Complete Garage Door Set extends from architect to owner.

The McKinney Garage Door Booklet will help any architect to plan garage entrances. Keep a copy on your desk. The many illustrations of sliding-folding and around-the-corner entrances shown in this booklet will enable your clients to see exactly what you plan. Specify the McKinney Garage Set by number on the plan.

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McKINNEY MANUFACTURING CO.
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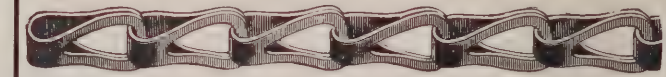
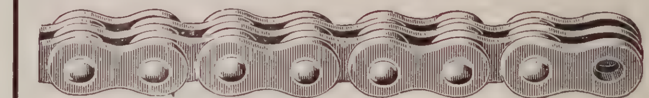
McKINNEY
Complete Garage Door Sets

"Giant Metal," "Red Metal" and Steel

SASH CHAINS



CABLE CHAIN



The following are a few of the numerous prominent buildings using our chains:

Marinouchi Bldg., Tokio, Japan	51,000 ft.
Woolworth Bldg., New York City	50,300 ft.
Illinois Merchants Bank Bldg., Chicago	34,000 ft.
Atlantic Refining Bldg., Philadelphia	30 000 ft.
Pacific Mutual Life Ins. Bldg., Los Angeles	28,000 ft.
Soldiers' Hospital, Milwaukee	25,000 ft.
Adolphus Hotel, Dallas	25,000 ft.
Technical High School, Omaha	24,000 ft.
London Guarantee and Accident Bldg., Chicago	20,000 ft.
Matson Bldg., San Francisco	18,000 ft.
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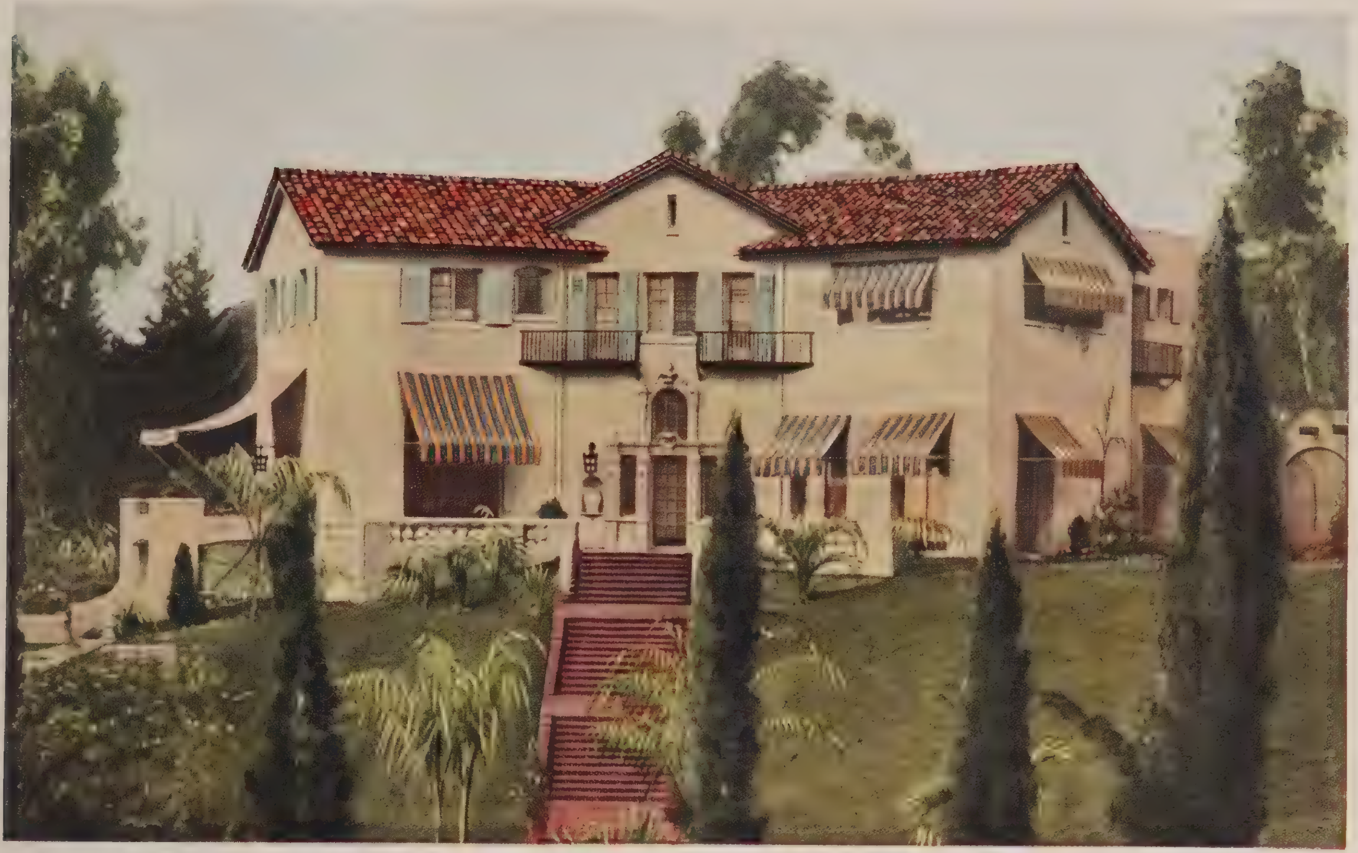

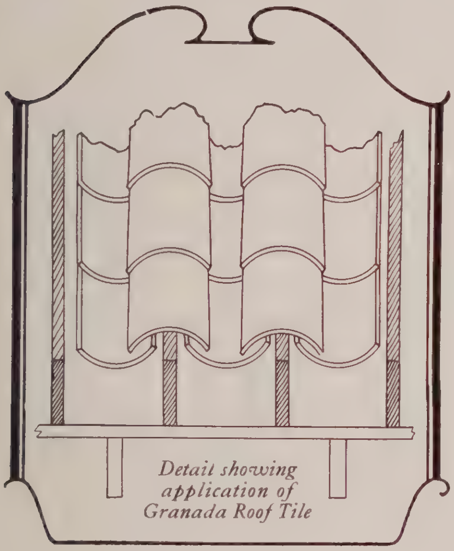

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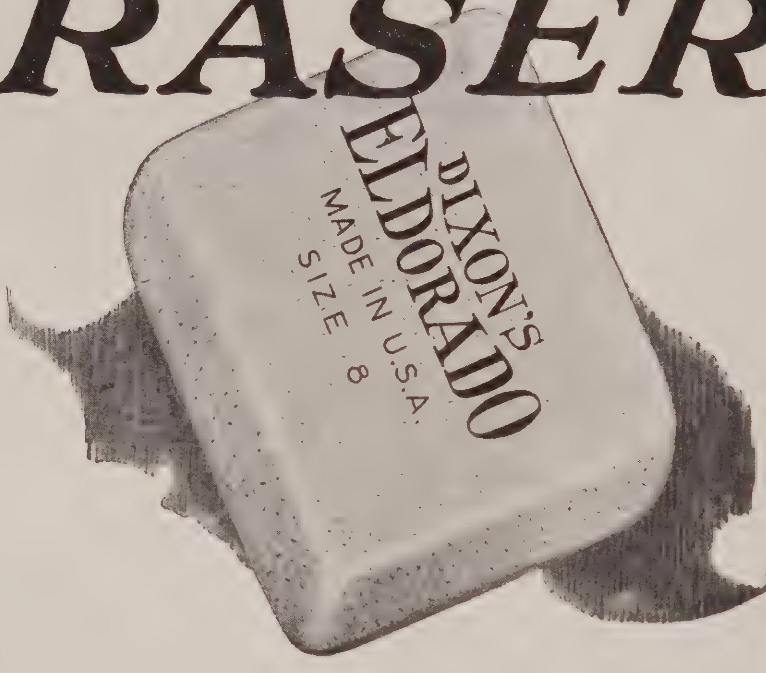

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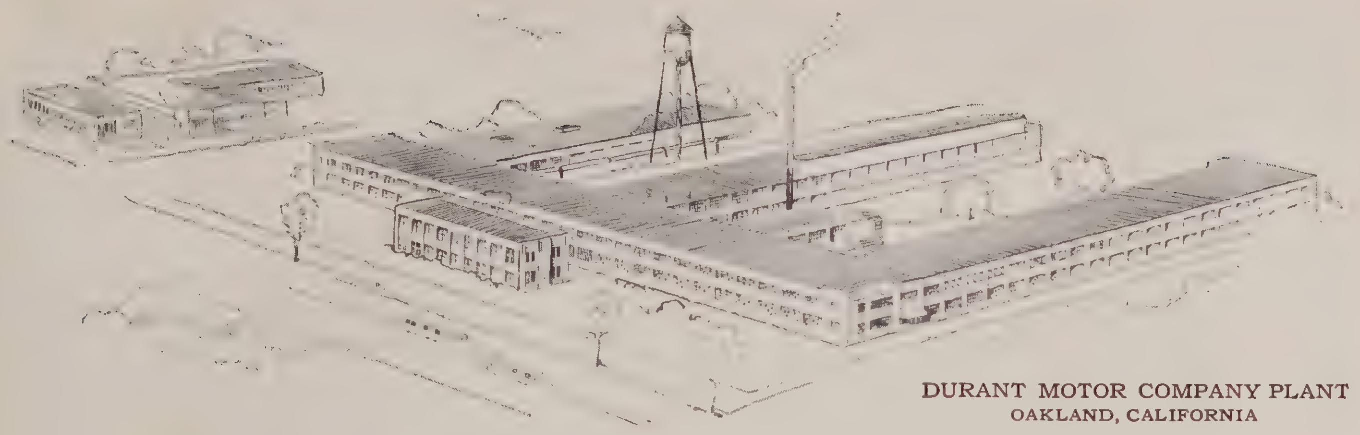

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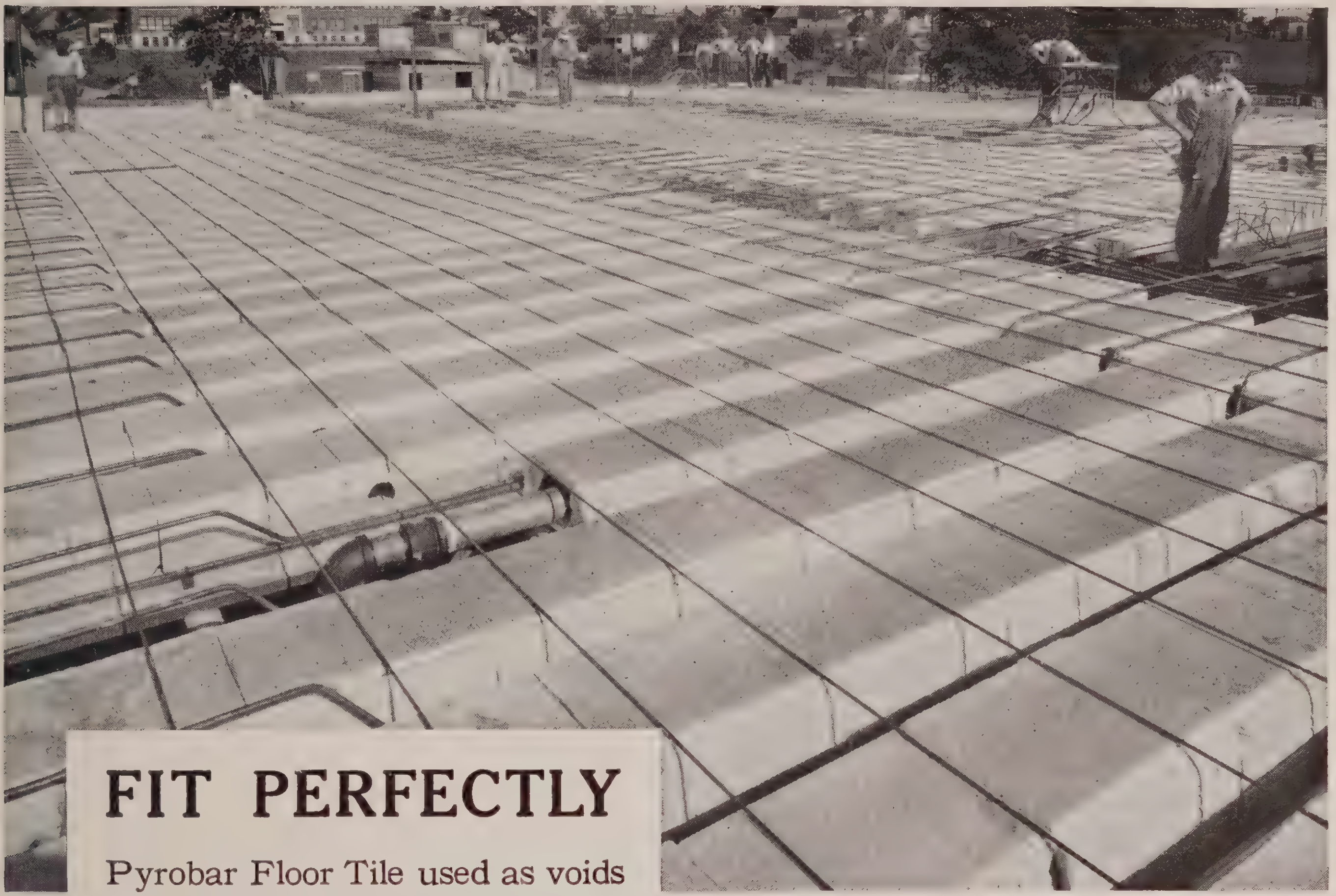

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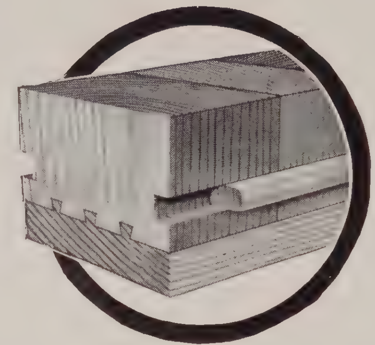

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BOOK DEPARTMENT

ENGLISH DECORATION AND FURNITURE OF THE LATER XVIII CENTURY. By M. Jourdain. 269 pp., 10½ x 13¾ ins. Bound in cloth. Price $25. Charles Scribner's Sons, New York.

DURING the latter part of the eighteenth century English architecture and decoration reached what many students regard as their most highly finished and polished period. A long succession of styles had followed one another in favor since the time centuries earlier when the English had first realized their possibilities, and each of these styles had left its mark upon England and added materially to the richness of the architectural and decorative residuum which the English had built up for generations to come.

Door in Harewood House, Yorkshire
Designed by Robert Adam
From "English Decoration and Furniture of the Later XVIII Century"

The types in vogue during the reigns of the first two Georges had lent themselves to the creation of much which was vast, magnificent and splendid—to much that fittingly expressed the point of view of England during a period which was essentially aristocratic, but perhaps it was its overwhelming splendor which palled upon public taste and which directed English architects toward expression which involved the use of simpler forms. Freed from dependence upon splendor and use of magnificence England's architects began to place greater emphasis upon purity of design and exactness of execution. Discoveries in Greece, Italy, and even in Asia Minor placed anew before the eyes of the discriminating the beauty of form apart from splendor of ornament. Many causes, in fact, united to effect the direction of taste toward simplicity, and if we continue this analysis we shall find that it is exactly this simplicity which renders glorious in the eyes of so many the last decades of the Georgian era.

Then, too, the benefits which flow from the wise use of architecture and decoration were at last being widely enjoyed. Nobility followed the lead of royalty and the gentry that of the nobility, and so on down the complicated social scale of the times, each class taking its cue from that higher up, and the great middle class, highly prosperous and anxious to possess the good things of life and able now to value and appreciate what lay within its grasp, were building city houses and acquiring country seats, and all this meant more work in the popular fashion which in turn rendered the fashion even more popular. Nor was this confined to England. The reign of George III saw the loss to Britain of the American colonies, but up to the eve of the revolution fashions current in England had been followed as well as might be in America, and American taste was far too well grounded and advanced to render it subject to change by political conditions, and during the war as well as after its close forms used in America were mere modifications of those current in England.

In this work the author presents a helpful review or summary of the architecture and furnishing with which English architects responded to the requirements of the day. The volume is particularly helpful in that it presents only what is comparatively moderate in scale, but this permits the inclusion of illustrations of a great variety of domestic work in town and country, and added to illustrations of the exteriors and interiors of the building proper are illustrations covering the great

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With a Preface by Ralph Adams Cram, F.A.I.A.

THE glories of old French architecture include far more than the Gothic cathedrals and the renaissance chateaux, for some of the most beautiful buildings in the world are the village churches and wayside chapels of France and the smaller domestic buildings of different kinds which abound in the rural districts and small towns.

For the architect whose work includes country or suburban residence work no more helpful book could be imagined, for these old French buildings with their incomparable grouping, besides affording practical precedent for modern use, were developed in materials easily had today in almost any part of the United States.

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array of accessories and furnishings which architects of the period valued so highly and designed so skillfully. The plan of the work itself is helpful, for after reviewing the subject in general terms there are taken up quite a number of individual subjects such as Decorative Painting; Chimneypieces; Halls and Staircases; Doors and their Architecture; Plaster; Metalwork and Lighting, while in the part of the volume devoted to furniture there are covered subjects relating to the design and construction of the furniture of the period. The architect is not left to admire these beautiful interiors and their accessories and then to wonder how to go about making a drawing from which present-day workmen could produce something similar, for the volume abounds in working drawings of interior architectural details and accessories and furniture of different kinds which to the practical architect or interior decorator would be worth far more than the cost of the volume.

STANDARD LIGHTING. 272 pp.; 240 illustrations; 6 x 9 ins. Price $3. H. C. Cushing, Jr., 8 West 40th Street, New York.

THOSE who make a study of lighting and its application to different uses declare that during the final year of the world war and the year which immediately followed the progress which was made in the science of lighting was more marked than during any preceding 10-year period. Continual improvement in lamp design and reflecting equipment of different kinds together with the rapidly growing knowledge of the fundamentals of lighting had during a long period of years been preparing the way for sudden, sharp advance in practice.

The trouble with lighting seems to be that changes in principle and practice, and consequently changes in equipment, come with such frequency that it is impossible to keep up with the newest in practice unless one is prepared to change the lighting equipment almost every year. The very uncertainty of practice in the department of lighting, therefore, renders it more than ever incumbent upon architects and engineers to provide in their clients' buildings the utmost in the way of lighting installation, for the time will come when even the most advanced equipment will be regarded as obsolete, and the usefulness of the original equipment must be prolonged over as many years as possible.

In this volume, the latest of a series of annuals which also includes "Standard Wiring" and "The Electric Vehicle Handbook," there is given the latest presentation of the subject of lighting. Each of the 17 chapters has been prepared and edited by a well known lighting engineer. It sets forth the most recent and most approved practice for architects, engineers and users of electrical lighting in residences, schools, churches, hospitals, offices, factories, and in buildings of every possible nature. The topic is treated exhaustively; every necessary point is covered, and in addition to all the diagrams and data which are necessary for the planning of the utmost in lighting facilities there are illustrations which show the results of using different systems of lighting for rooms or buildings which are either somewhat similar or exactly alike. In addition to discussing the matter of lighting in the usual forms considerable space is devoted to dealing with different theories and systems of exterior lighting, such as the use of street lamps, electrical signs and the installations frequently used for illuminating the exteriors of buildings.

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THE INDUSTRIAL ARTS. *By Huger Elliott.*
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THE Committee on Education of the A. I. A. has produced this volume for use as a textbook in American colleges, and for general reading and study by the public, with the purpose of arousing interest in the fine arts and creating a better understanding and appreciation of them. The book is intended specifically to appeal to those who have heretofore taken but little interest in the arts, and have had no realization of the fact that the fine arts are for them and that these arts are already inseparably connected with their everyday lives.

Each of the chapters has been prepared by a recognized authority on the subject. Written for the laity, the work is free from technical matter and is notable for the clarity of its language and absence of complicated theoretical discussion. It presents in simple form the vital principles of design and construction which not only govern good architecture, but should also influence the character of all other arts and every manufactured product and material thing that human hands can make.

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FRENCH FURNITURE UNDER LOUIS XV. Volume III of "Little Illustrated Books on Old French Furniture." By Roger de Felice. Translated by Florence Simmonds. 132 pp., 4½ x 7 ins. Price $1.60. Frederick A. Stokes Company, New York.

APPRECIATION in America of the various English architectural and decorative styles has made far more progress than understanding of the periods which were developed in France. Many Americans profess to see in these splendid French styles only a very sumptuous and florid magnificence, far more in keeping with the pleasures of roués than with the simple home life of sober business men which we like to think characterizes the American home.

Perhaps our appreciation of these styles, in which architecture and decoration reached what many consider their apogee, would be keener and more alive if our understanding were more complete or based upon a firmer foundation. The French styles in their integrity are almost unknown to Americans, and what vague understanding we do possess is likely to be based upon the examples of their use seen in the public or semi-public rooms of hotels or in certain gorgeous and badly overdecorated private residences, all these examples showing use of the French types in their most florid forms. Few Americans have had an opportunity of making the acquaintance of French architecture and decoration at the source, and someone has observed that with the familiarity which the study of really good and really French decoration brings there comes enthusiastic appreciation of its excellence. Indeed this appreciation is often developed by even the study of old French decoration and furniture which some of the museums now make possible.

But even those whose sympathetic understanding of French styles is more or less developed often find difficulty in acquiring a really firm grasp upon the types generally found ascribed to the period of Louis XV. His was the age in which magnificence culminated, and with his reign are associated all those riots of splendor which come to mind when the French periods are mentioned. As already suggested, study and familiarity with the French types in their native setting are necessary, and this study and familiarity bring to light the fact that a great part of the work of the Louis XV period was as different as possible from the showy, highly ornate type, and that particularly away from Paris and the influence of the court there abounded throughout France use of architecture, decoration and furniture which was delightfully restrained and full of strong character unmistakably French.

Understanding of this aspect of the Louis XV style is furthered by study of this work, one of a series which has already done much to cultivate appreciation of French types. With a thorough knowledge of the subject the author writes convincingly; the translator has succeeded admirably in supplementing the author's work, and the result is an invaluable little volume which could hardly be passed over by anyone who desires to obtain a true knowledge and insight into this period of French architectural history. Such a work naturally depends for much of its interest and usefulness upon its illustrations, and in this instance they are adequate and aid immensely in explaining the text. There is given a concise review of the background of the period, its decoration and furnishing, and a word is given regarding the use of French styles in present-day homes in America.

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THE BUNGALOW BOOK. By Charles E. White, Jr., A.I.A. 221 pp., 5½ x 8 ins. Price $2.25. The Macmillan Co., New York.

AS the costs of building give signs of slowly approaching a permanently reasonable figure there is being issued from various presses a succession of works on domestic building which will at least serve to sustain the interest and keep up the courage of the prospective builder until the dawn of that happy day when conditions make possible the actual beginning of building operations. In the meantime these useful volumes will materially aid the hopeful builders in deciding what to aim for, and will assist in balancing the merits of a house of shingles against one of clapboards, and the relative advantages of both these when compared with a house coated with stucco. The value of such works is great, for, among other reasons, they prepare the soil in advance so that the architect—when the time for consulting an architect comes—does not have to begin work on ground which is often hard and sometimes stony.

Mr. White, who has already written "Successful Houses and How to Build Them," presents in this volume the case for the bungalow. Being an architect he observes the conventions in the use of the word "bungalow," and does not apply it to a building such as one we know in a New York suburb where a three-story house with 18 rooms and six baths is so referred to. We are not quite certain, however, that a real bungalow ever has an upper story, notwithstanding the convincing illustration of a "story-and-a-half" example at page 57.

As a treatise covering the small house the work is admirable. As a rule people interested in the building of such houses are those for whom the utmost must be had from every dollar's expenditure. Mr. White's work aids in securing this, for he goes fully into the matter of floor planning and illustrates it by many excellent plans which secure from the areas the most advantageous floor arrangements. Methods of construction are analyzed, heating and plumbing systems discussed, and helpful chapters are devoted to such subjects as kitchen and laundry equipment and the garage likely to be used.

CONCRETE DESIGNERS' MANUAL. By George A. Hool and Charles S. Whitney. 276 pp., 6 x 9 ins. Flexible binding. Price $4. McGraw-Hill Book Co., New York.

THE use of concrete, being constantly adapted to new purposes, renders the material one of the most important with which architects and engineers have to deal. The vast extent to which concrete is being employed has led to the formation of regulations intended to govern its use, the regulations themselves being based upon successful use of concrete as well as upon research conducted under the auspices of the various bodies issuing the regulations, and these rules owing to widespread observance have naturally acquired much of the force of actual laws governing the use of concrete.

In this volume are given formulæ, tables and diagrams which will aid in the rapid designing or laying out of concrete in conformity with the Joint Committee Recommendations, the American Concrete Institute Recommendations, and the New York and Chicago Building Code Requirements as in effect at the present time.

SPANISH INTERIORS AND FURNITURE

THESE portfolios present in the form of plates a selection of the best examples of Spanish domestic interior architecture and furnishing of the period from the sixteenth to the eighteenth century. The illustrations do full justice to the Spanish faculty of securing quiet architectural richness and unusual effects by the use of simple materials skillfully used, the decorative value of plastered walls when contrasted with simple, well planned woodwork in which much use is made of structural timbers, and the effect upon the interior of deeply splayed windows and doors used in Spanish interiors.

FOR the architect or decorator there is here given a wealth of ideas as to the possibilities of the Spanish style, which are as yet comparatively unknown. The furniture, pottery, tiles, ironwork and fabrics which go to making the Spanish interior so unusual are not difficult to secure, and their judicious combination might easily result in an effect out of all proportion to the cost involved. It is almost wholly a matter of tasteful and characteristic arrangement, and much of the skill which is necessary for arranging these effects is to be acquired from these illustrations of actual Spanish homes.

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THE EDITOR'S FORUM

WINNERS OF SCHOLARSHIPS

ACCORDING to an announcement by the New York jury of architects, the Le Brun Traveling Scholarship for 1923 has been awarded to Paul F. Simpson, a graduate of the Carnegie Institute of Technology. Graduate students and architects from all parts of the country entered this year into competition for this coveted prize, which is awarded under the direction of the New York Chapter of the American Institute of Architects and which carries an allowance of $1,400 for six months' travel abroad. This award to a Carnegie man is but the second time in the history of the scholarship that the competition has been won by anyone not a resident of New York.

This is not the only honor which has fallen this year to the Carnegie Institute of Technology, for Paul M. Olsen, a graduate of 1922, recently won the John Stewardson Traveling Scholarship, offered each year by the Pittsburgh institution, this prize for 1921 having been won by Russell F. Simpson, brother of the winner of the Le Brun scholarship for the present year.

1923 ART STUDENTS' TOUR

AMERICAN students of architecture will be interested in the opportunity offered to them by the Institute of International Education to study the development of architecture in Europe under Albert C. Phelps, professor of architecture in the College of Architecture, Cornell University. Professor Phelps will be a member of the faculty of the art students' tour which has been organized for the summer of 1923 under the sponsorship of the institute; other members will be Edith R. Abbot of the Metropolitan Museum of Art, New York, as a lecturer on the history and appreciation of painting and sculpture, and John C. Tidden of Rice Institute, as instructor in painting and lecturer on the fine arts from the standpoint of the creative artist.

The group will sail from New York on June 30, on the Cunarder "Saxonia." Professor Phelps will lecture during each day of the transatlantic voyage, as a means of sketching in the broader outlines of the development of architecture and of preparing for the more specific lectures during the land portion of the trip. His lectures on shipboard will be illustrated by stereopticon slides from the collection of the Cornell College of Architecture. The return voyage will be by the "Saxonia," due to arrive in New York, September 4.

The Institute of International Education, under whose auspices the art students' tour has been organized, has for many years been carrying on an important work characterized by such activities as exchange scholarships, exchange professorships, etc. During the last two years it has been extended to include also European travel for college students, organized so as to permit students to travel more inexpensively, more conveniently, and with greater educational return than they could do otherwise. Complete information may be secured from the Institute of International Education, or from Irwin Smith, 30 East 42nd street, New York.

VISIT OF A FINNISH ARCHITECT

ALTHOUGH he had never been in the United States, that Eliel Saarinen, noted architect of Helsingfors, Finland, has carried the American skyscraper beyond the conception of American architects was the tribute paid to Mr. Saarinen at an Architectural League banquet which was recently given in his honor at the Fine Arts Building, in New York. Mr. Saarinen is winner of the second prize in the *Chicago Tribune* contest.

In introducing Mr. Saarinen, President Howard Greenley of the Architectural League said that the organization desired to be among the first to extend a welcome to the distinguished foreign architect to the United States, and that the league had a real appreciation of his design which commended itself to many as what should have been given first place.

VICTORS IN HOSPITAL COMPETITION

ANNOUNCEMENT is made of the names of the winners of prizes in the international competition for plans for a small general hospital which has been recently conducted by *The Modern Hospital*. The first prize, of $500, was won by Butler & Rodman, of New York; the second, of $300, by John Roth of Atascadero, Calif., and the third, of $200, by Ernst Hoedtke, of Cambridge, Mass. Honorable mention was awarded to Cervin & Horn, hospital architects, of Rock Island, Ill., and to Lemuel Cross Dillenbach, of the School of Architecture, University of Illinois.

The jury of award was composed of Dr. S. S. Goldwater, of Mount Sinai Hospital, New York; Asa S. Bacon, of Chicago; Clarence H. Johnson, of St. Paul; William Buck Stratton, of Detroit, and Adelaide M. Lewis, of Kewanee, Ill. Selection was made from 51 sets of plans, submitted by hospital architects from Canada, England, and various parts of the United States, and the judgment was made upon the basis of economy in construction and operation, integrity of design, and flexibility. In the May issue of *The Modern Hospital* publication of the prize plans will be made, and subsequently there will be published 15 or 20 from among the remaining more interesting plans.

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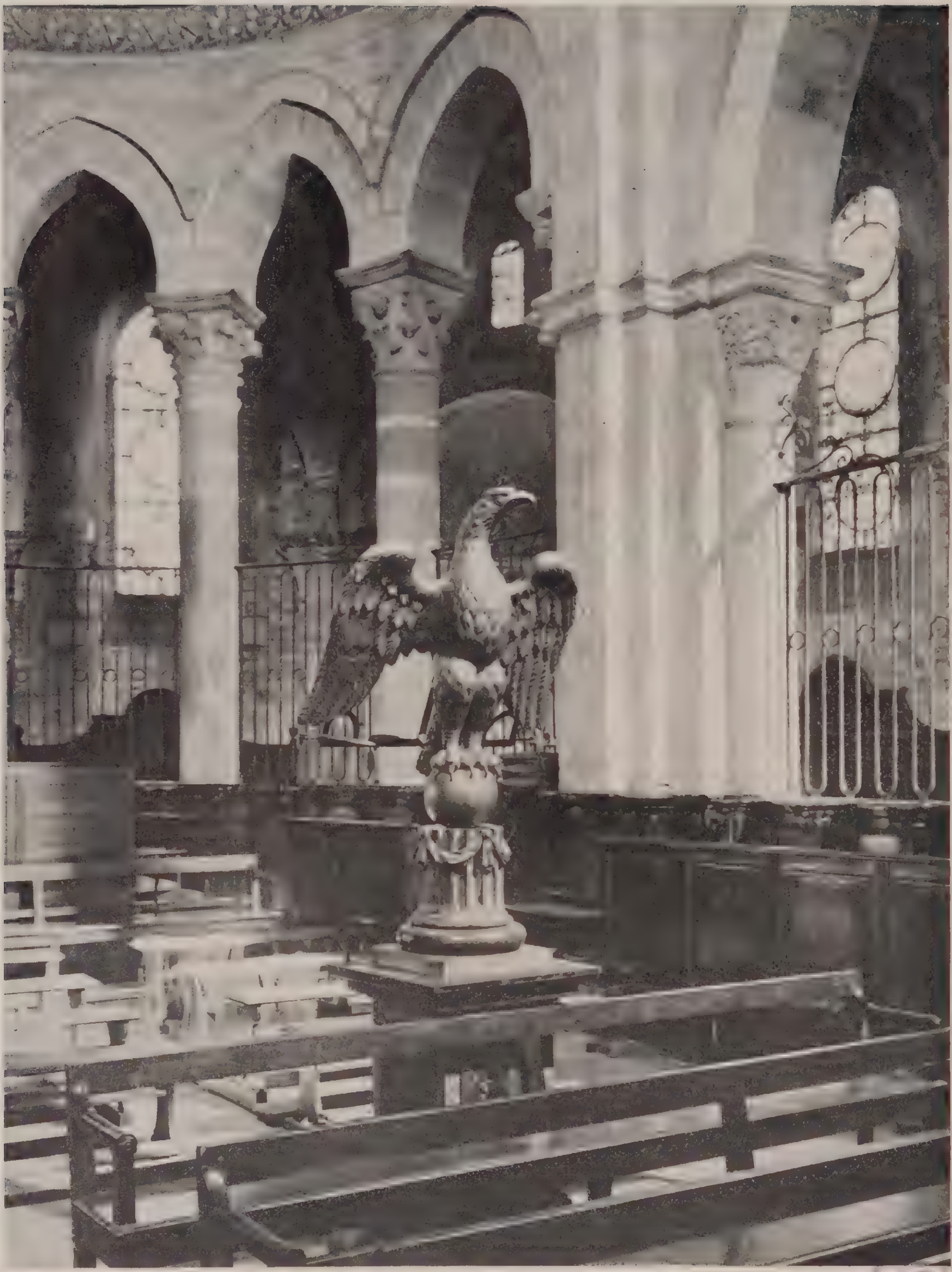

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The
ARCHITECTURAL
FORUM

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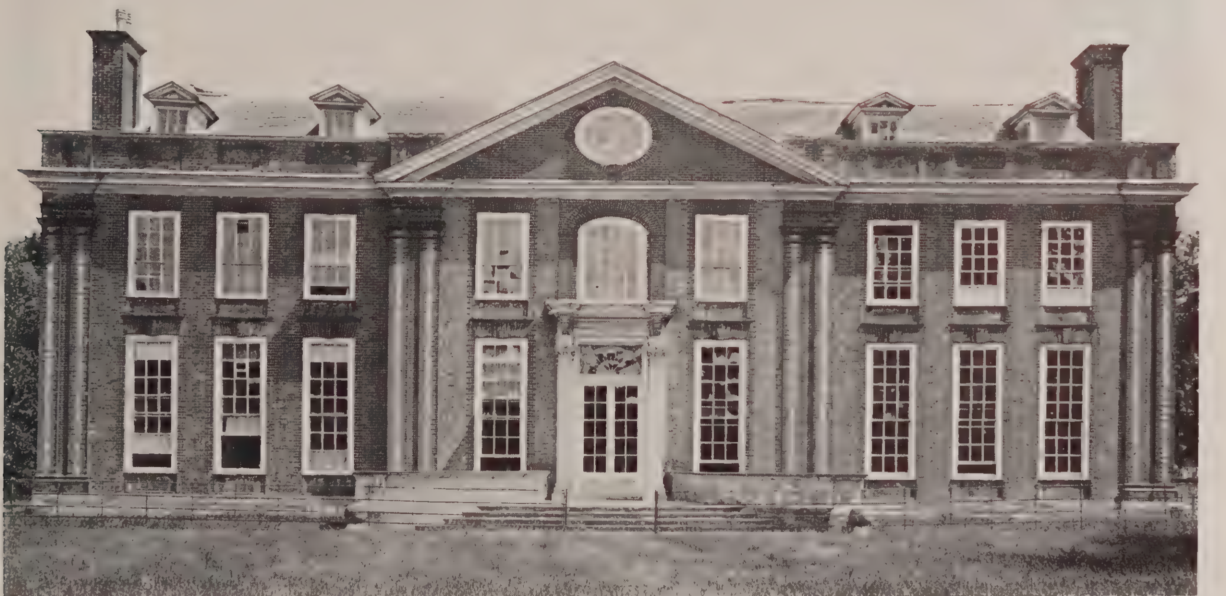
Characteristics of Georgian Brickwork in England

By NATHANIEL LLOYD, O.B.E.

PROBABLY no architect ever fully realized the potentialities of brick as did Sir Christopher Wren, but it is only natural that so great a designer should appreciate so varied and adaptable a building material. Sir Edwin Lutyens once remarked to me that renaissance should be spelled with a W—Wrenaissance,—so much does English architecture owe to him. Wren used brick in conjunction with stone, with painted wood, and by itself—brick moulded, cut, rubbed and carved. Hampton Court's east and south fronts are examples of the first combination; Morden College, Blackheath, of the second, and Christ's Hospital (now destroyed) of the use of brick alone. The example set by Wren was followed by others in early Georgian times, but during the reign of George II house design generally, and brickwork with it, deteriorated. It seems as if his influence died away in course of time, and there was no outstanding genius to succeed him. Under these circumstances it is not surprising that we should find houses of the early part of the reign of George I very similar to those erected during the lifetime of Queen Anne.

Bradbourne is a typical example, built of pinkish red stocks which are mottled gray, mauve, green and buff in varying intensity, with dressing of bright red rubbers. It is a fine instance of what can be achieved by a happy combination of colors. The walling brick measure $8\frac{5}{8}$ x $4\frac{1}{8}$ x $2\frac{3}{8}$, and four courses rise 11 inches, so the joints are approximately $\frac{3}{8}$-inch thick. The red dressing is of soft brick 8 x $3\frac{7}{8}$ x $2\frac{3}{16}$, and four courses rise $9\frac{1}{4}$ inches, consequently they do not bond with the walling brick—a not uncommon occurrence in eighteenth century work. The illustration is of the west front, each of the three divisions of which is flanked by coupled pilasters. The very tall windows are characteristic of the period and give great dignity to the



West Front of Bradbourne, Kent

Dated 1713, completed 1714. The very tall windows impart much dignity to the facade elevations of different facades.

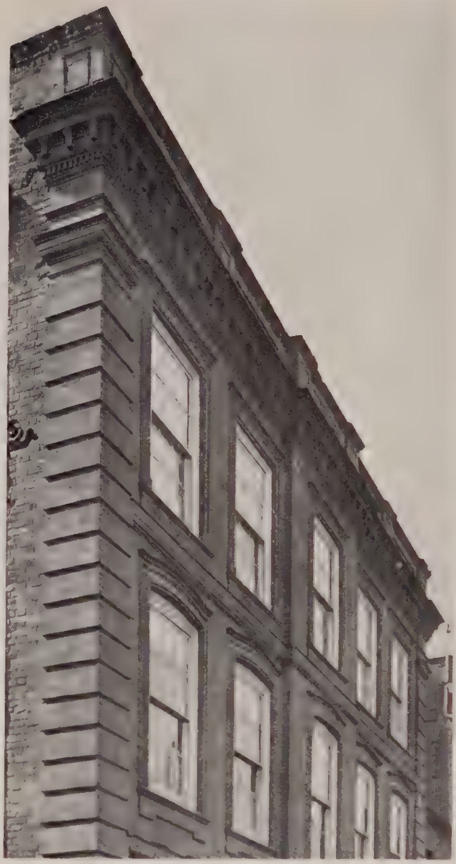
The detail illustration from the south front shows the variety of the brickwork, elliptical windows and a sham niche. Some brick have a considerable growth of gray lichens on them, which enhances the variety of surface and color. The house has a fine staircase, and the details throughout are so good as to be worthy of Wren himself. Unfortunately, the designer is not known.

Wilmer House, Farnham, illustrated by an angle view, has remarkably fine cut and moulded brickwork. The window architrave mouldings are unusual. The whole of this front is carried out in red brick. There are houses in other neighboring towns differing from this, but of similarly good workmanship. They were built within a few years of each other, and it is possible that they were all constructed by one company of workmen who traveled from place to place for the purpose.

Fitzwilliam Hall, in Cambridge, is an entirely brick-built house. The illustration shows the greater roughness of the walling brick compared with the brighter dressing. The *guttæ* to the window apron pieces are a not uncommon feature and, as usual, are carved out of soft brick.

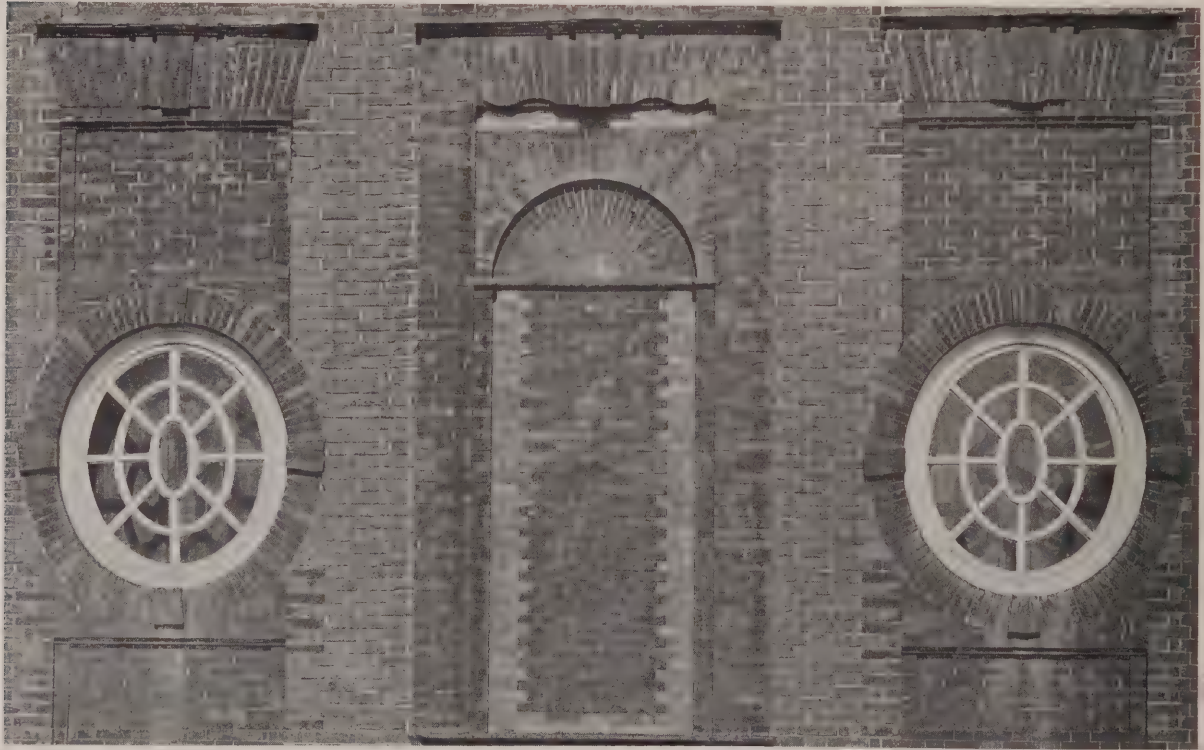
Dedham contains a house where the rich, bright, cherry color of the dressing forms a strong contrast with the grayer walling brick, and the white painted work of the niche order and of the doorway does its part in producing an exceptionally gay effect, with which a green door and iron railings form a pleasing contrast.

Church House is a typical country-built Georgian structure. The walling brick are gray-yellowish-pink and measure 9½ x 4½ x 2¼. Four courses rise 11 inches, so the joints are approximately ½-inch thick—about the limit for joints in Georgian work which were more often ¼- to ⅜-inch thick. The dressing



Wilmer House, Farnham, 1718

Angle view showing projections and cut brickwork. Cornice details and window architraves are notable

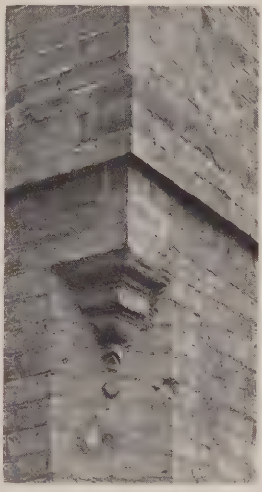


Brickwork Detail, South Front of Bradbourne

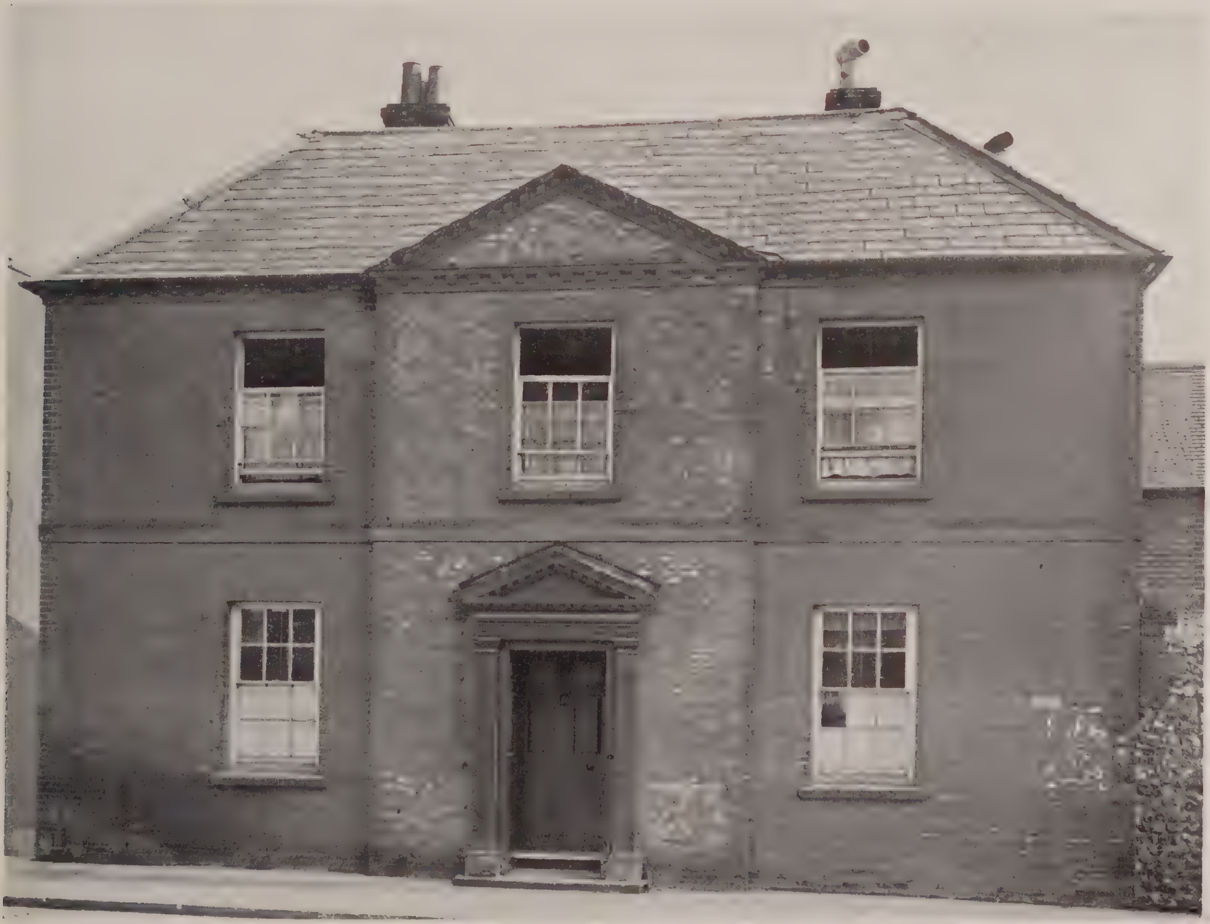
Walling brick are pinkish-red stocks, mottled gray, mauve, green and buff; dressing of bright red rubbers

Note the cut soffit of center arch

is of bright red rubbers. The pilaster shafts project 2 inches from the wall face. Their capitals, of cut brick and tiles, are well proportioned and are connected with the cornice by a short length of architrave and frieze, including one triglyph of the order. The only stone used is the coping of the parapet. The *regulæ guttæ* are carved out of a brick laid with invisible joints. The same treatment, where it was necessary to avoid dividing members by thick joints, made it impossible always to bond the courses of the pilasters with those of the wall. The three courses, only one of which is moulded, form the string, tying together features which without it might appear scattered. The woodwork of the sash windows of both floors is set back 1 inch from the wall face. One sometimes finds in houses of this period that this setting back is greater at upper floors. At Rye and at Winchelsea, both a few miles distant from Beckley, are good houses where the ground floor window frames are practically flush with the wall face and those of first floor are set back an inch. This must have been done entirely for effect, possibly with a view to avoiding producing an impression that the upper windows were falling outwards.


Brick Corbel from Gray's Inn, 1759

The elliptical arch of the middle window is an interesting piece of gauged brickwork. The curve of the semi-ellipse is good. Instead of the *voussoirs* being normals, the *intrados* and *extrados* have been divided each into an equal number of parts. No. 1 of the *intrados* has then been joined with No. 1 of the *extrados;* No. 2 with No. 2, and so on. The result is agreeable and not so weak looking as might have been supposed. The construction of the key of this arch must have been an arduous task for the workmen; indeed, close examination shows that this was so. It is built up of red rubbers, with invisible joints. Each impost is cut from one brick. Another short length of frieze, the width of the key, is taken up to the cornice which breaks around it as over the pilasters. The result is to form a central feature, giving variety and character to the elevation. The doorway is severely rectangular, and probably the designer had this in mind when he introduced elliptical and segmental window arches.

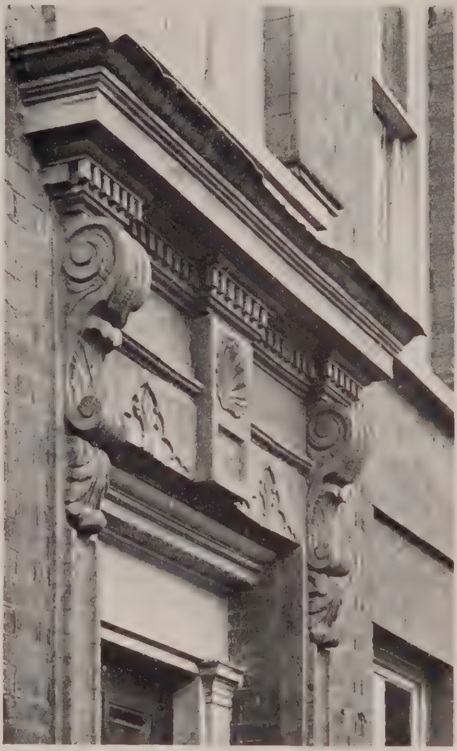

House at Arundel, Sussex, *circa* 1780
Center portion of gray headers with red brick quoins. Wings all of red brick
Note effective handling of brick in the cornice

No. 39 West street in Farnham is a good example of the use of red brick with white painted woodwork. The doorway is of unusual design, well proportioned, and with the handsome frieze and cornice confers a very distinctive air upon the elevation. Farnham is rich in houses having this type of frieze. The treatment of the strings (which are not alike) and of the moulded brickwork of the central windows is happy, particularly the manner in which the string with two moulded members is swept over the first floor window.

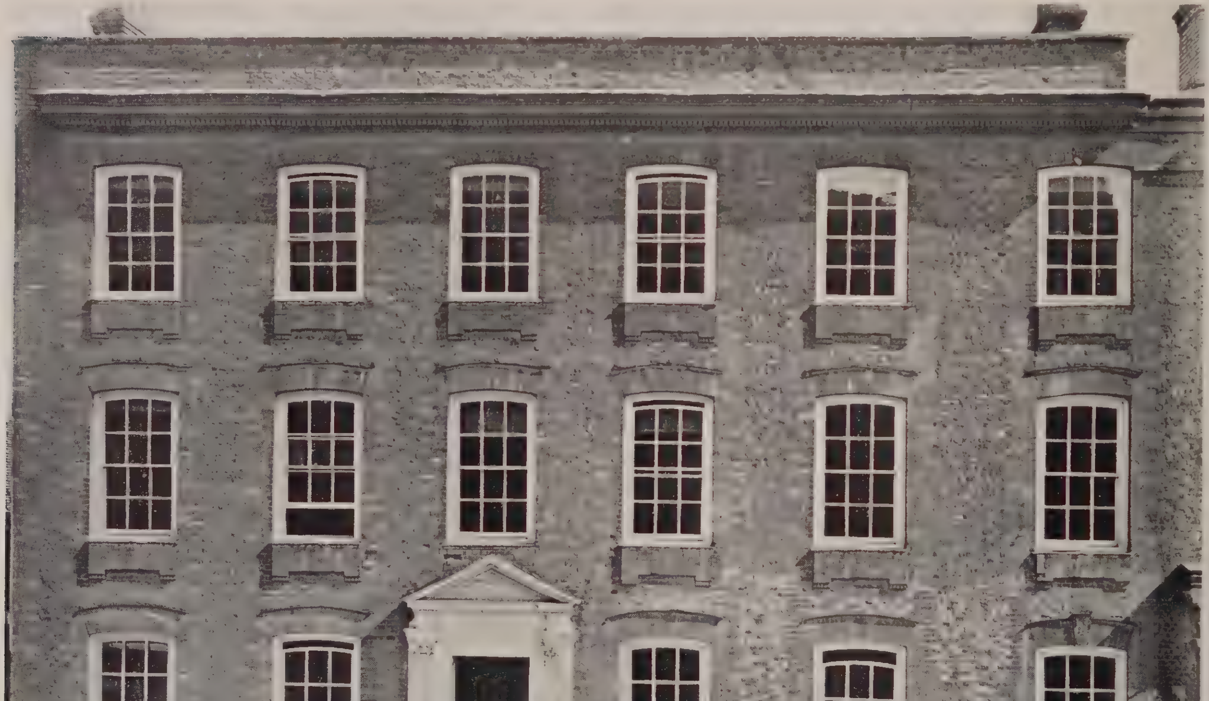
This house at Cullompton has a bow window, a detail which has been so often mishandled in modern work that an eighteenth century illustration of this popular feature may be of interest. The bows with the classic doorway and simple cornice produce without any elaboration one of those eminently satisfactory results so characteristic of Georgian work.

Lansdowne House shows one form of a great variety of treatment of what may be called the five-window type of Georgian house. Sometimes the center window was surmounted by a pediment; in other examples we find the center portion, embracing three windows, breaking forward and the cornice over this carried up as a pediment. Often the result was not well proportioned, the center being too large for the elevation. In this house the proportions are excellent, and all components are combined successfully. It only requires that the door should be painted dark green or brown for suitable contrast.

The house at Arundel

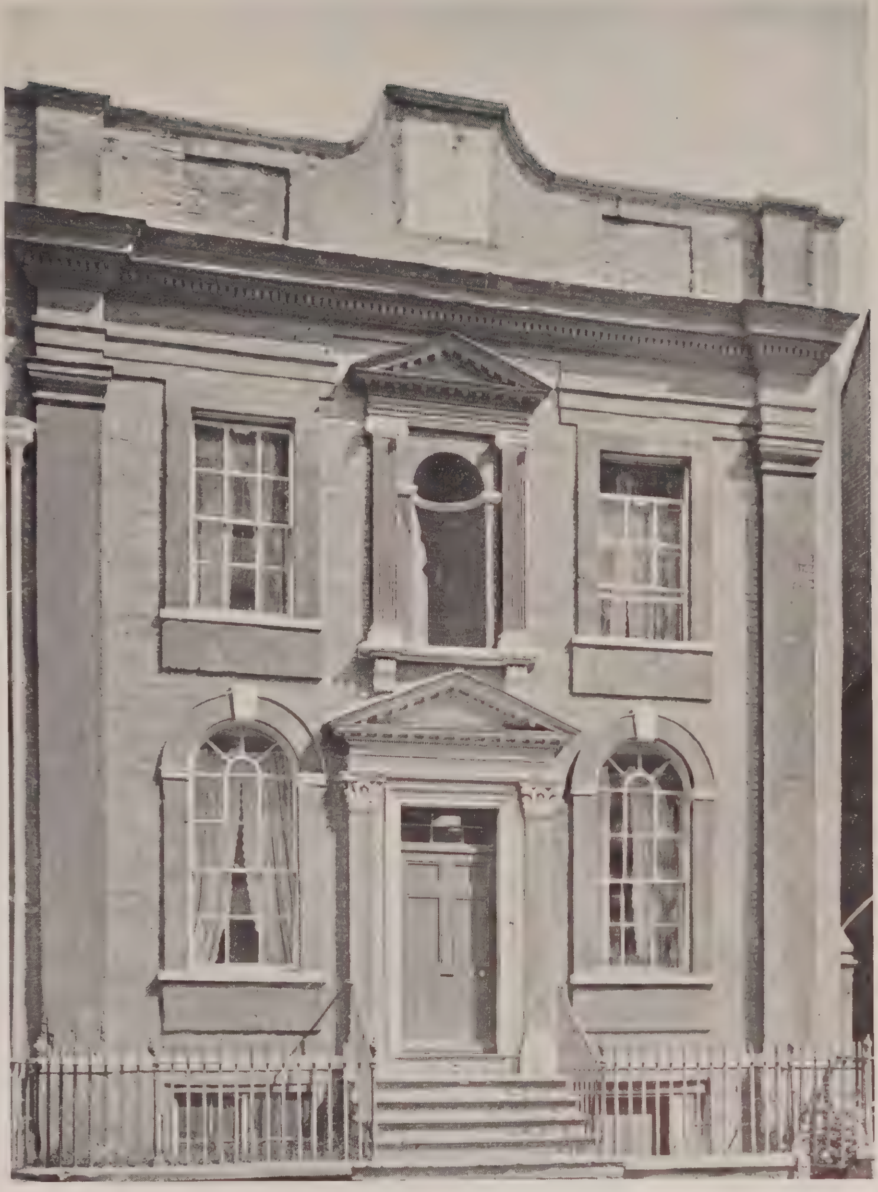


Detail of Gauged and Carved Brick Doorway at Farnham

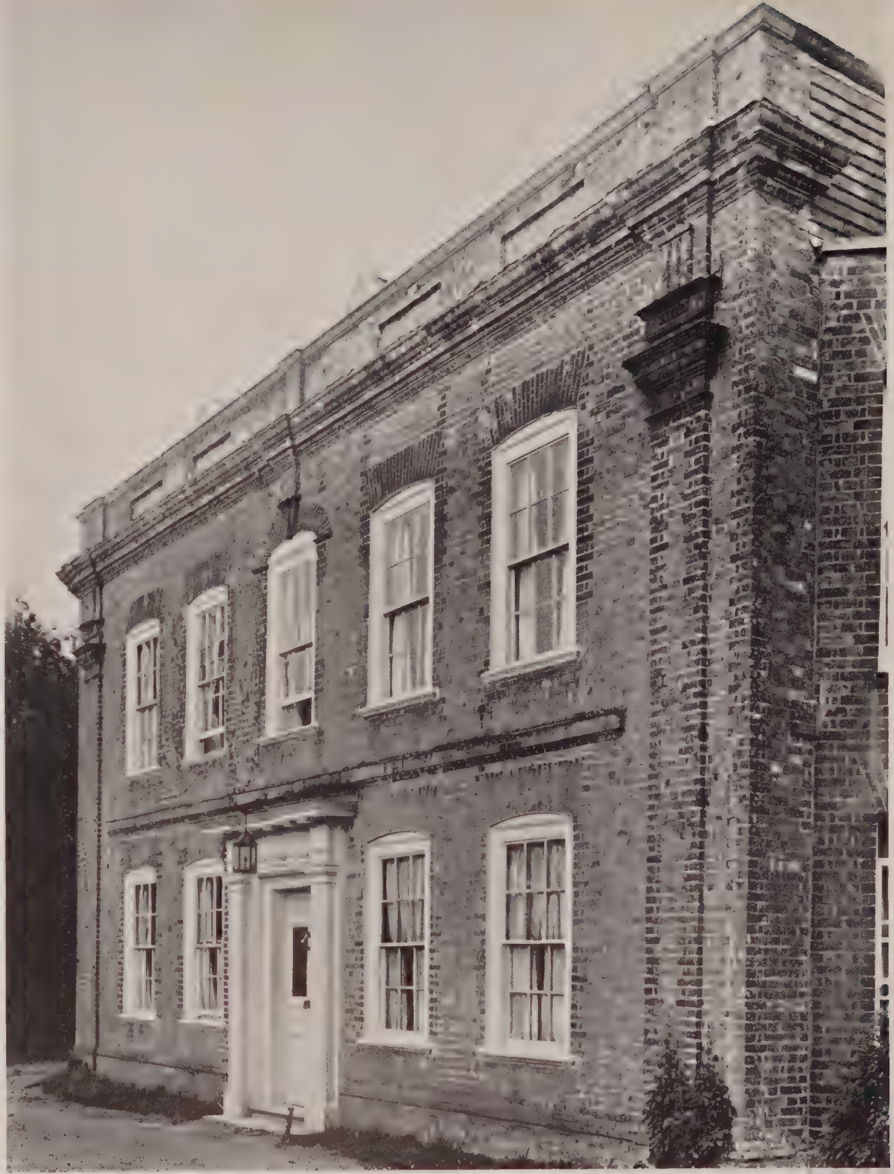


Fitzwilliam Hall, Cambridge, Dated 1727

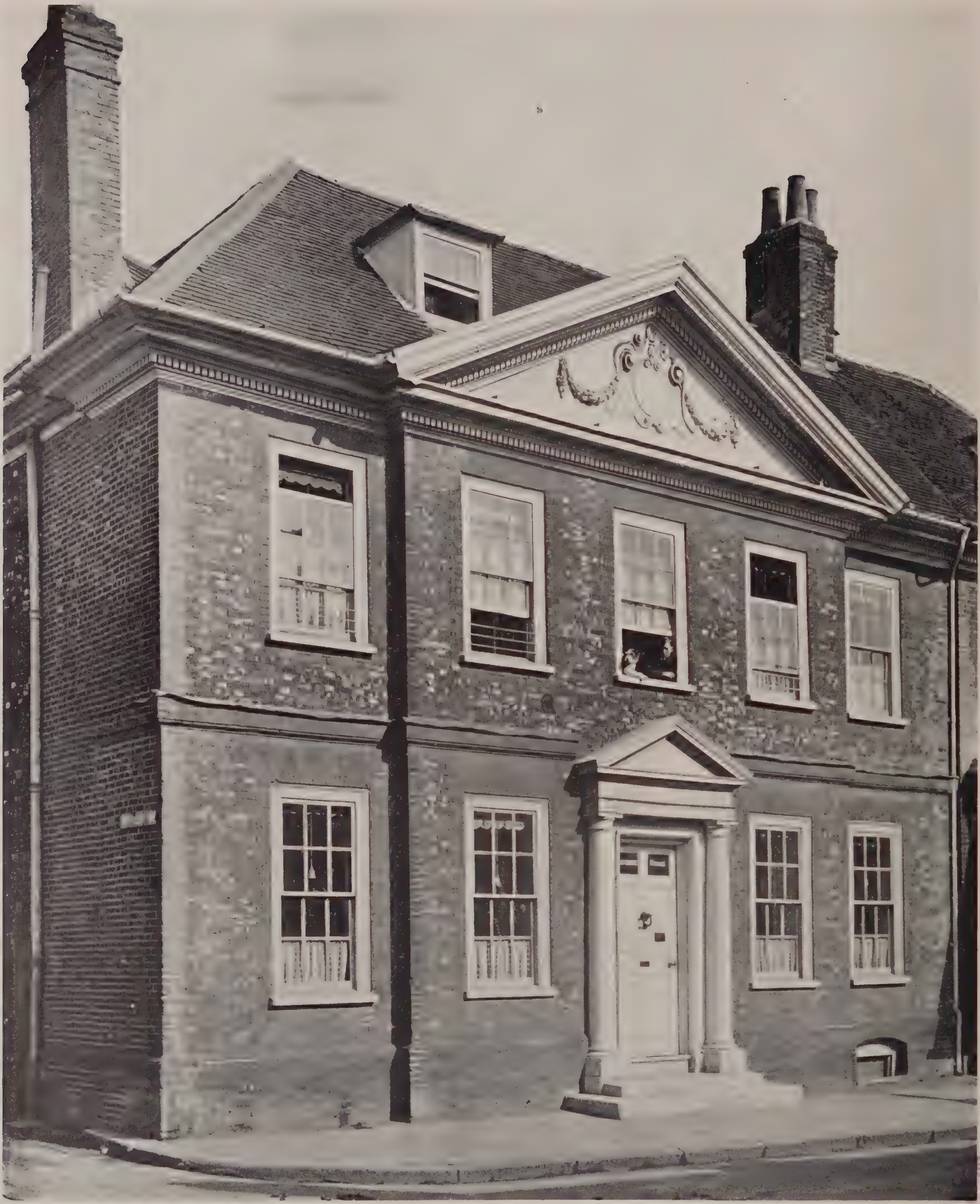
A typical street elevation of Georgian times, showing contrast of texture and color in walling and dressing brick



HOUSE AT DEDHAM, ESSEX, *circa* 1732
Bright cherry red dressing, gray walling brick, white woodwork, green door and iron railing produce brilliant color effect

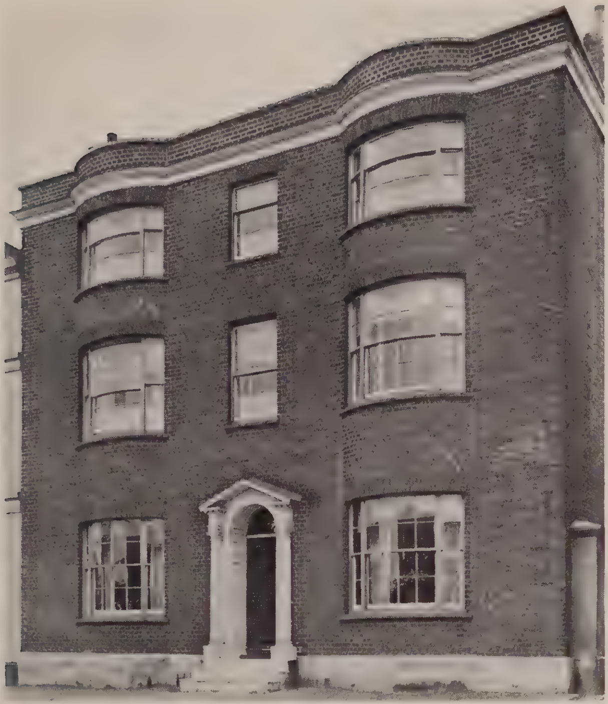


CHURCH HOUSE, BECKLEY, SUSSEX, DATED 1744
Typical country-built house; yellowish-pink walling brick, mottled gray with bright red dressing



LANSDOWNE HOUSE, ALTON, HANTS

An excellent example of the five-window type of Georgian house facade. The proportions of vertical divisions are extremely good. The upper wood panels of the door have unfortunately been removed; the effect of the facade would be improved if the door were painted green



House at Cullompton, Devon, *circa* 1780
Simple and suitable bow windows in brick

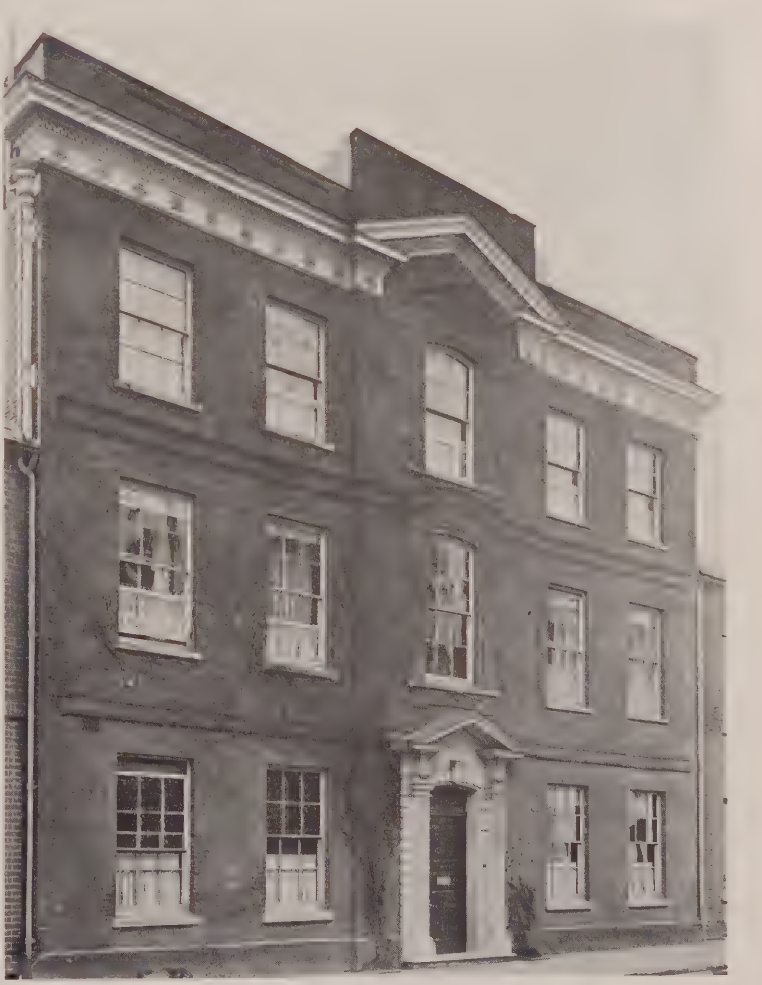
shows use of the diaperwork patterns so skillfully handled by Tudor brick-builders but long gone out of fashion, lingering only in the use of gray vitrified headers built in Flemish bond with red stretchers. These produced a checkered effect, sometimes used over a whole elevation, generally as a local embellishment as for panels. Patterns had given way to a selection of harmonious color combinations for wallings and dressing. A variation of this treatment was to build a whole division of an elevation in gray headers—heading bond—with red brick quoins. The center of this little house is treated in this manner. Bricks burned with wood fuel produce flared headers of softer grays than can be obtained by coal fuel, the headers from which are more vitrified and consequently less sympathetic in tone.

The corbel table forming the cornice of this house is one of many simple projections used in this way. Sometimes the alternate bricks, which project in this house, were set back an inch from the wall face. In other instances this course was built in "dog-tooth dentils"—chevron fashion; indeed there were many ingenious variations current, which could not have been easily and economically executed in any material other than brick. One effect of using such a corbel table is that eaves having little projection are not felt to be scanty. The plain string course of three slightly projecting courses is another of those details which cost little and are worth much.

Rustication of doorways and windows, with gauged arches but often without any moulded bricks being used, was another device which proved exceedingly effective. Modern work in such situations and also for quoins at the principal angles of a house is often quite spoiled by excessive depth of the drifting or channels. In the old work this seldom exceeded 1 inch, even for three-story buildings. Sometimes also one finds a thinner brick course introduced to reduce the rise. The window at Petersham is a good example of this Georgian treatment.

One does not find so much ingenious corbeling in the eighteenth century as in earlier work, but that on the chamfered angle of a building at the entrance to South Square, Gray's Inn, illustrated herewith, is a good specimen of bricklayer's ingenuity.

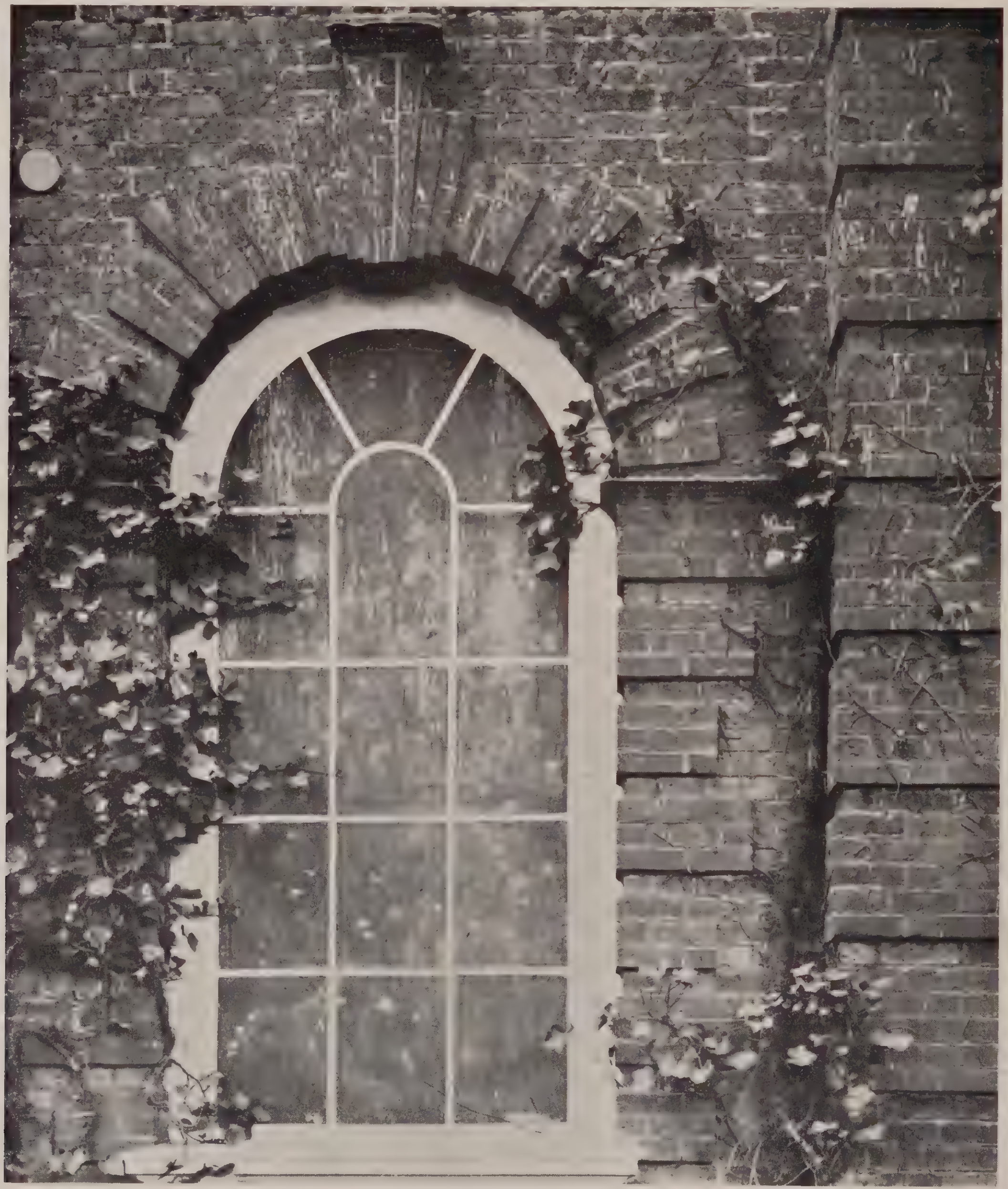
It must not be supposed that these remarks and the illustrations relating to them exhaust the subject of Georgian brickwork, which has especial importance at the present time in view of the revival of interest in architecture of this period and of the



No. 39 West Street, Farnham, *circa* 1750
An effective combination of deep red brick and white painted woodwork
Excellent Georgian wood detail in doorway and cornice

right use of brick as a building material. The taste for the smooth, box-like brick is dying out, for architects have already made up their minds that better texture is necessary. If, therefore, one were to emphasize one element in Georgian brickwork as particularly worthy of attention at the present time, I think it would be its variety of color. This is obtained in two ways: (1) by harmonious association of quiet colored walling brick with bright red dressing brick, and (2) by obtaining variety of color in the individual brick by what the brickmaker calls "mottling." This is not a speckled effect, but consists of a surface change of color over a large area. Properly done, the effect is most satisfactory, and it possesses the additional recommendation of not increasing the cost of production. The brick for dressings to be used with these mottled brick should be bright and even in coloring. If well chosen, I do not know any more quietly effective result obtainable in the whole field of architecture.

Modern building conditions favor use of brick, for in many parts of the world the forests are disappearing, which means that lumber commands excessive prices, and in some localities stone suitable for building is not found. Brick, however, is manufactured widely, and the increased demand is leading manufacturers to a study of the old brickwork of Europe and to emulation of the excellent brick there made, while architects are turning anew to the use of brick, and in many instances are using the material for securing results which would do honor to architects of an earlier age. As already suggested, excellent effects are to be had by use of brick alone, provided sufficient variety is secured.



Rusticated Window at Petersham, Surrey, *circa* 1740

An effective treatment for which moulded brick are not essential. The channels should not exceed one inch in depth

The Curved Stairway

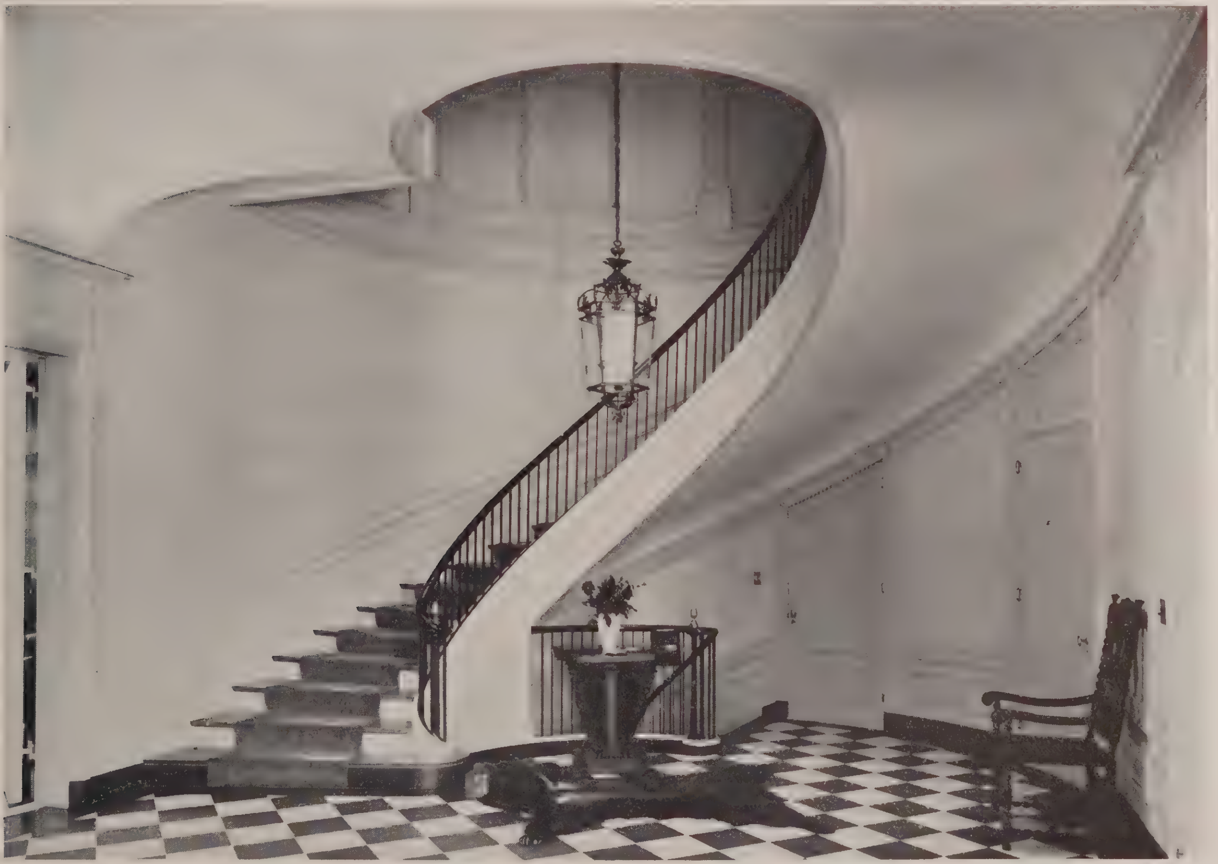
By MOTT B. SCHMIDT, A. I. A.

IF the fireplace is the heart of a room, the stairway is the heart of a house, and in the development of the Anglo-Saxon dwelling the design and construction of the staircase have faithfully mirrored the changing customs, styles and habits of the people.

The stair demonstrates to a remarkable degree the interesting manner in which all the industrial arts have marked the progress of the history of civilization. In the sudden transition from the style of Louis XVI to that of the directoire and the empire one may read with startling exactness the story of the French revolution, and if some of the other changes in style are less easily defined, because more gradually or subtly conceived, even the most casual examination is more than amply rewarded.

Surely it does not take much imagination to picture, before the massive iron-studded oak portals of sixteenth century Florence, the swashbuckling gentleman who with one blow of a mighty fist could playfully rend into splinters the rosewood and mahogany panels of eighteenth century London, and while it may seem a far cry from the polished treads of Portman square to the simple steps that supported the hob-nailed boots of our earlier colonial settlers, the search for an appreciation of what we believe to be beautiful is one of the things that makes living different from merely existing, and with each stair comes a special opportunity to weave a little romance into our practical age, instead of only a question of how many risers we need for headroom.

The sixteenth century in Europe saw the wane of ecclesiastical architecture and the development of the castle, hall, or other semi-domestic building where the stairs were enclosed between walls of solid masonry. Straight, wide steps were used for access to the principal rooms, with small, curved stairways for occasional use. These early curved stairs were almost always of stone, the risers radiating from a continuous newel. Stairs of this type were often placed in piers of solid masonry, and at other times to avoid cutting into the principal rooms they were allowed to project as towers from the faces of the exterior walls. As these structures grew in height, with increased need of communication between various floors, small curved stairways became more numerous. There were often many of them in the same building, in consequence of which the projecting stair tower became a feature of English, as



A formal treatment of a curved stairway with the iron railing set on a closed string

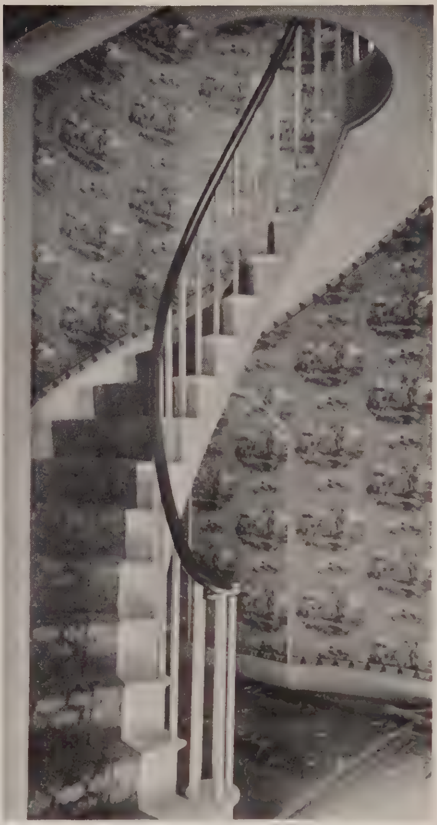
House of Robert S. Brewster, Esq., Mt. Kisco, N. Y.

Delano & Aldrich, Architects

well as of various types of French, domestic architecture.

The use of wood for stairways eliminated the necessity for the vaulted stairs of stone, and in Elizabethan and Jacobean England stairways were built almost entirely in straight runs with square landings. It was not until the seventeenth century in England and France, after the stair hall had become a distinct architectural feature, that use of the curved stairway in its modern form began.

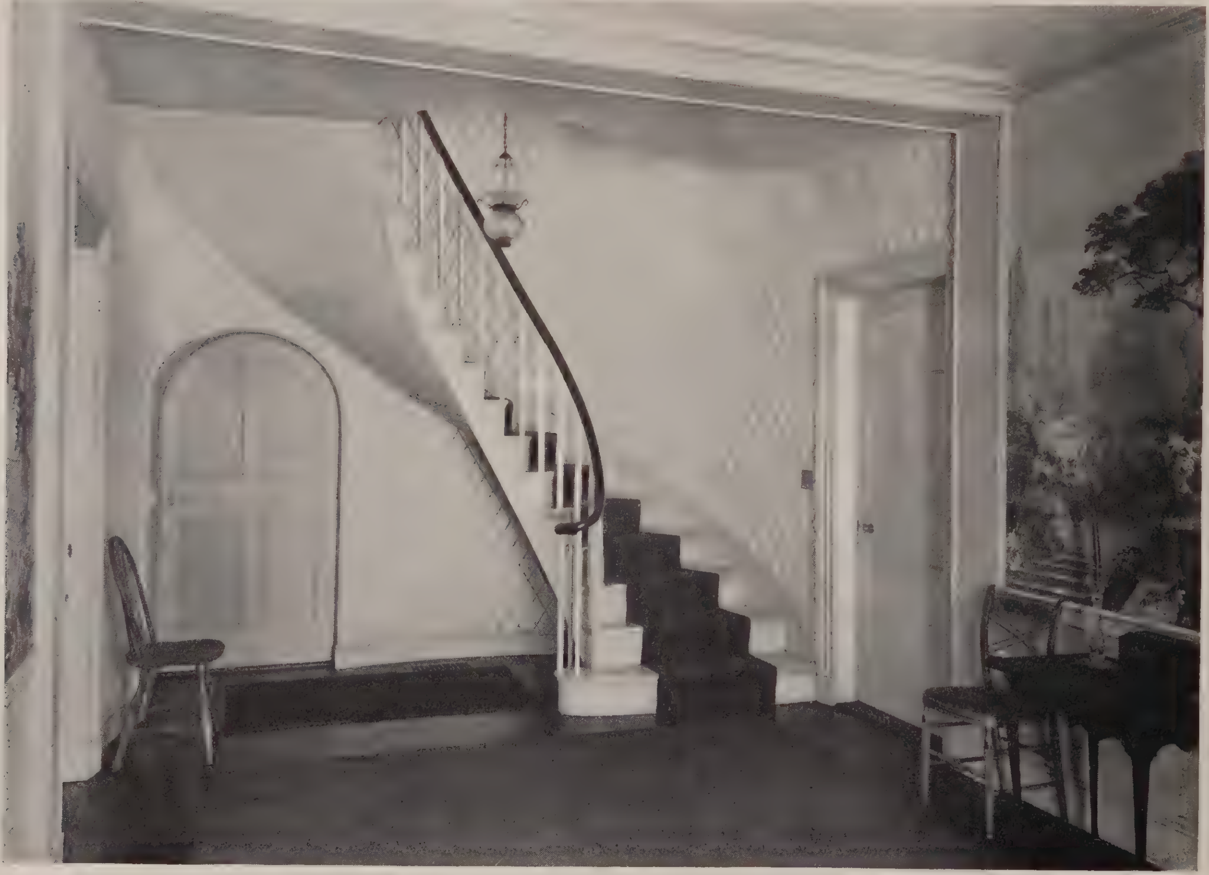
Soon after the rise to favor of the separate baluster in wood or stone, handrails and balustrades of iron in both wrought and cast forms began to be used. The stairs themselves were constructed of either stone or wood, and this choice of material, with the accompanying advance in craftsmanship, gave great opportunity for increased possibilities in both design and construction. The still existing eighteenth century stairways of France and England tell with mute eloquence that this opportunity was not often lost!



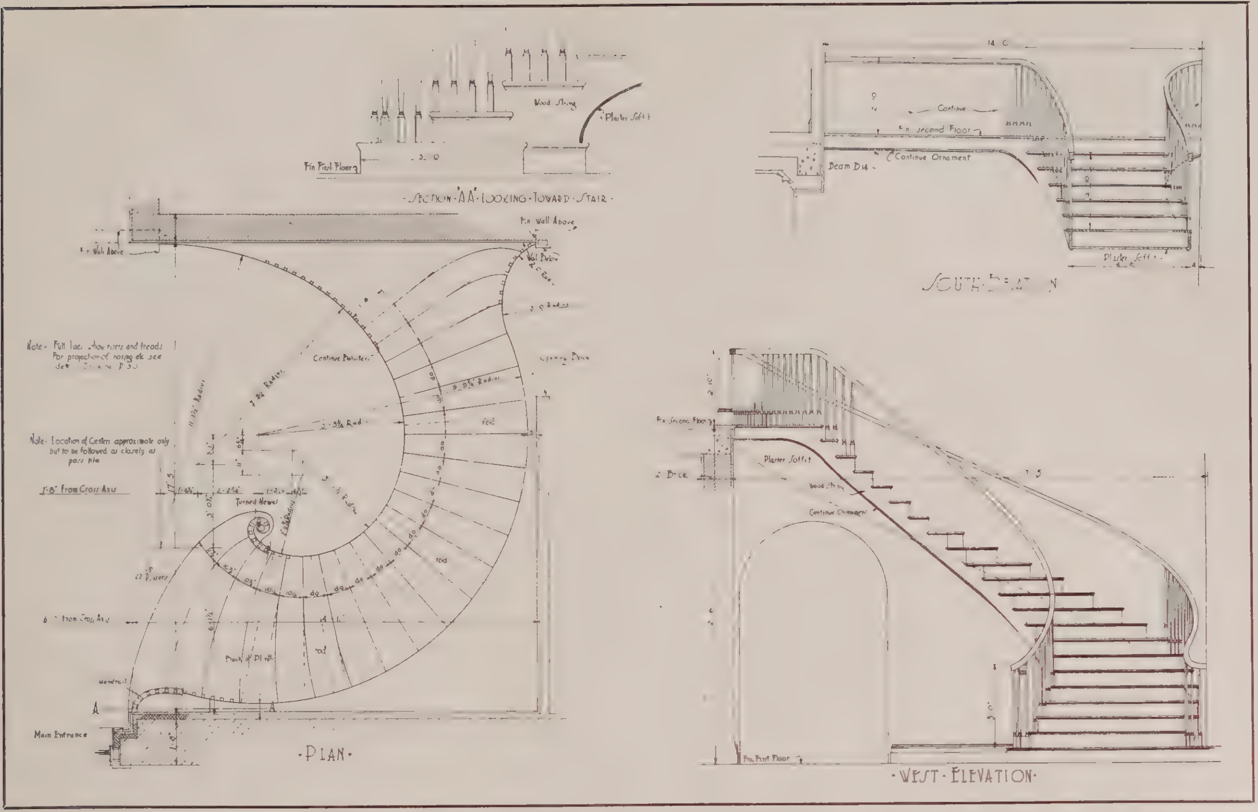
Steep Curved Stairway in Dana House
Orford, N. H., *circa* 1810

The early American stairways were built largely of wood. We know well the simple turned and tapered balusters, placed solidly on their sturdy pine treads, in the tiny hallway of some old New England farmhouse, and the gracious southern stairways of alternately turned and twisted and fluted balusters, reminiscent of Georgian England, with only the treads and handrails of the precious mahogany that had to be imported.

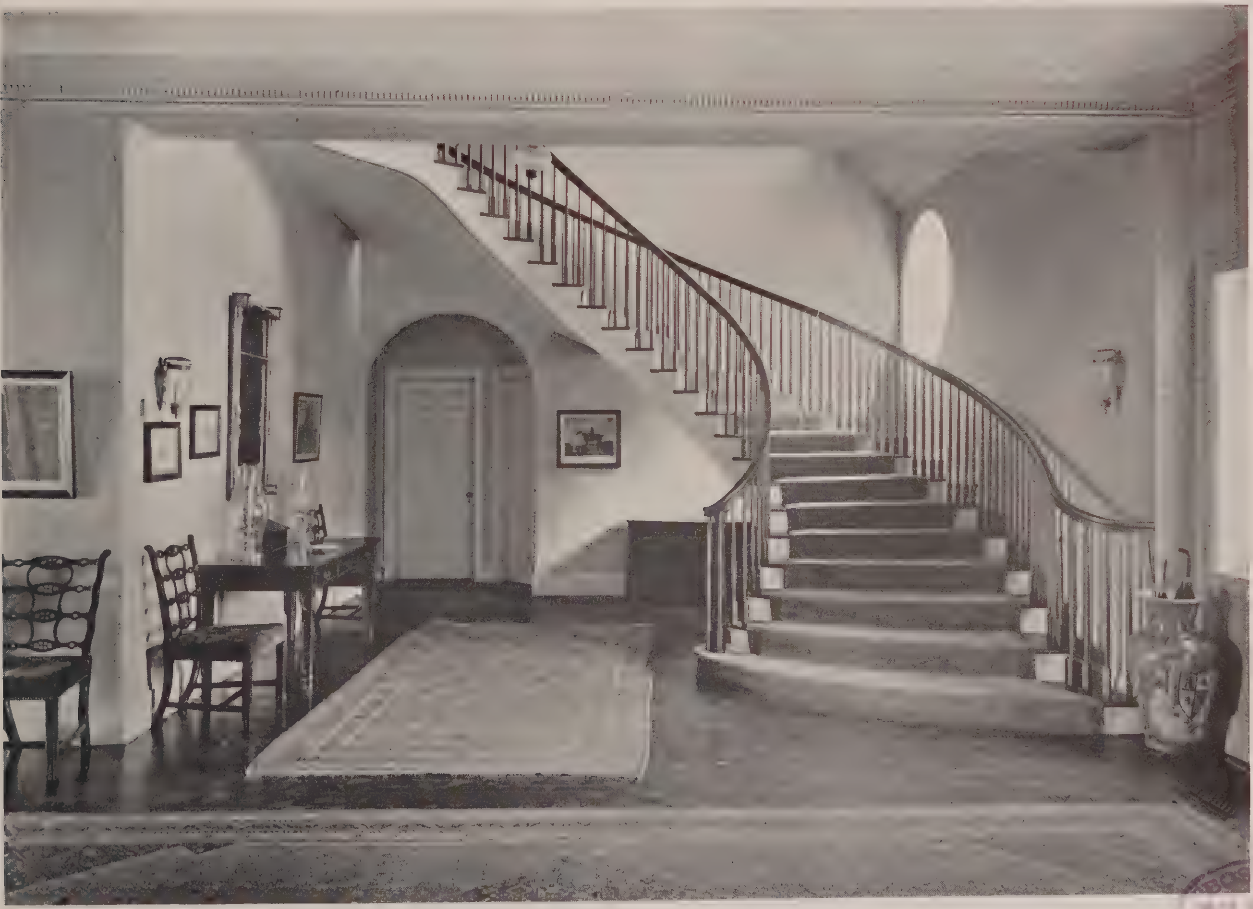
But whether the treads are wide and the risers low, or whether the stair is steep and spiral, with the treads so narrow that the risers must be cut out for the toes of the children, as they rush pell-mell up into the cobwebbed mysteries of the attic, every curved stairway seems to possess in some degree a domestic quality that is excuse enough for it to continue to wind its way gracefully aloft.



Modern Curved Stairway Based on Late Eighteenth Century Model
Derby & Robinson, Architects



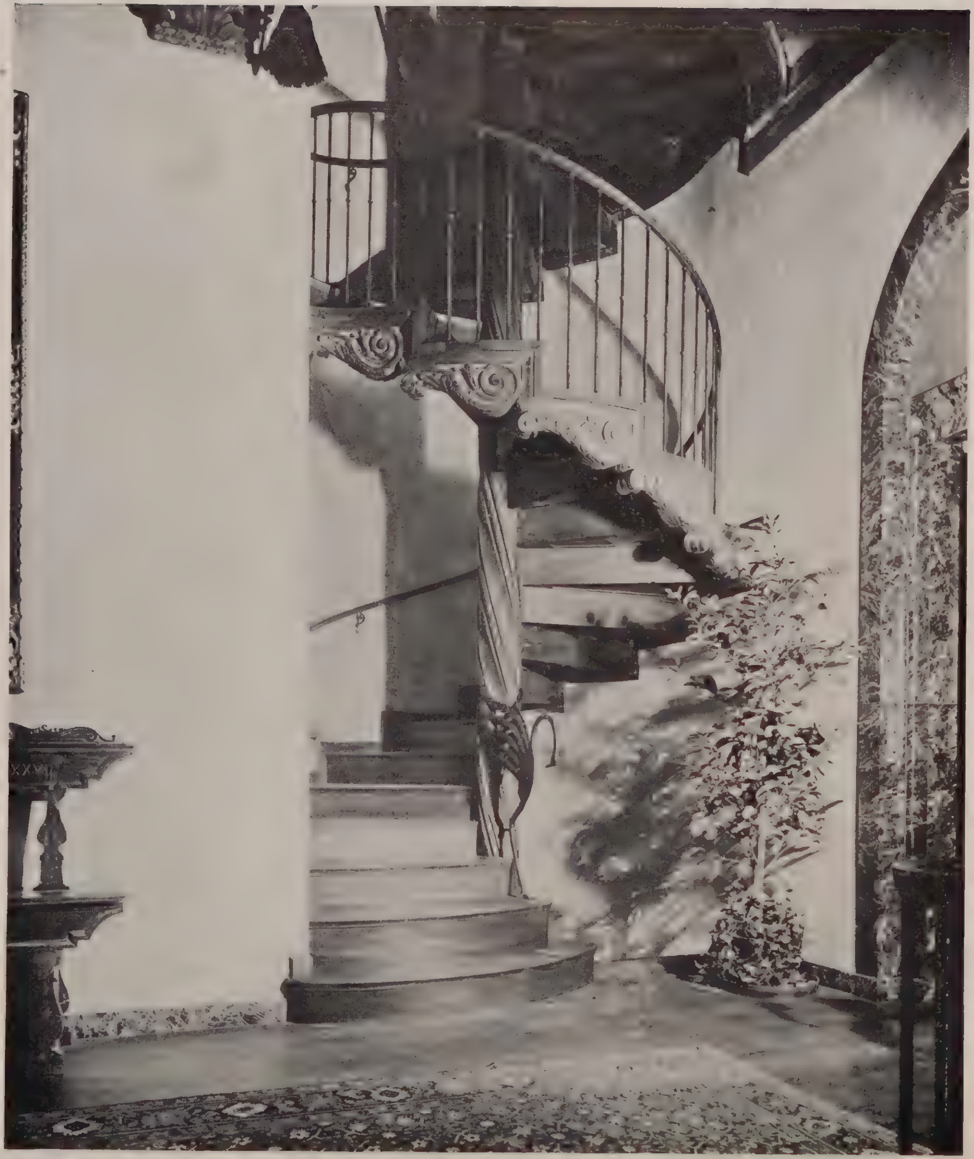
DETAILS OF PLAN AND ELEVATIONS



CURVED STAIRCASE OF WOOD CONSTRUCTION

HOUSE OF G. HERMANN KINNICUTT, ESQ., FAR HILLS, N. J.

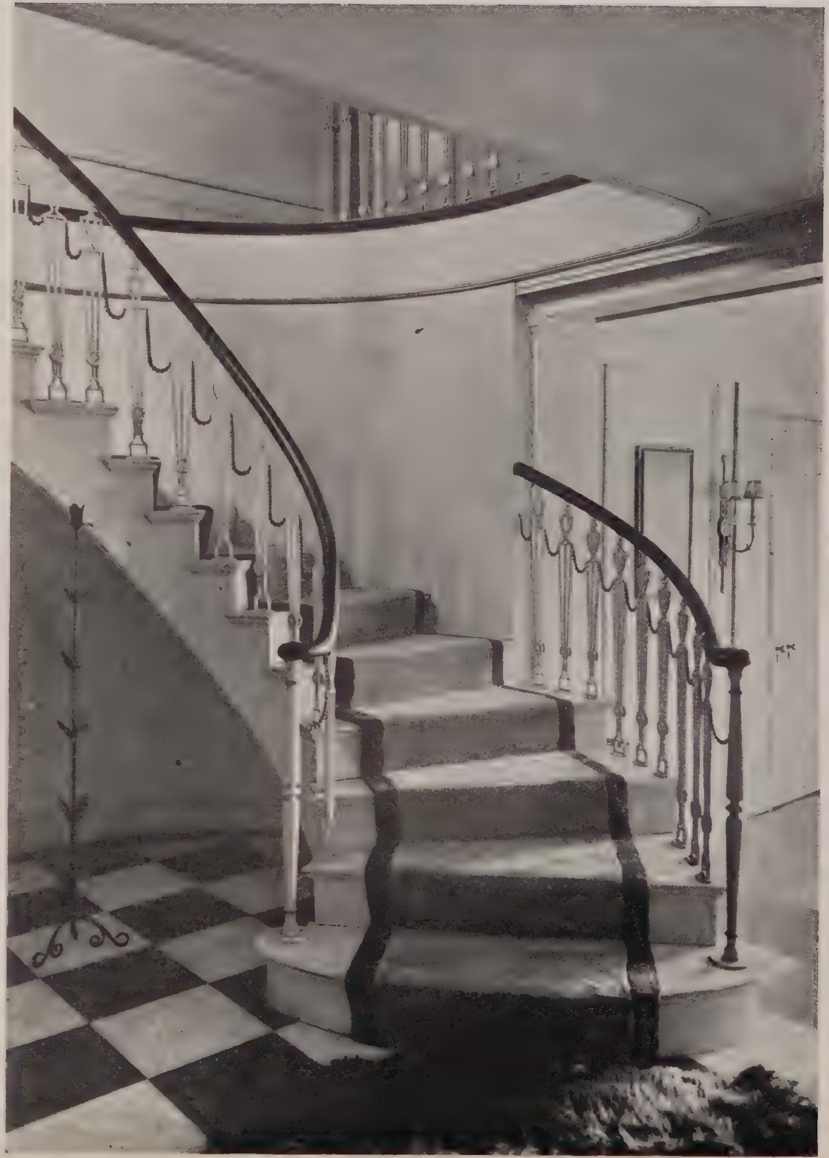
CROSS & CROSS, ARCHITECTS



An informal stairway with continuous center newel; construction of wood with iron balustrade

HOUSE OF CHARLES E. MITCHELL, ESQ., NEW YORK

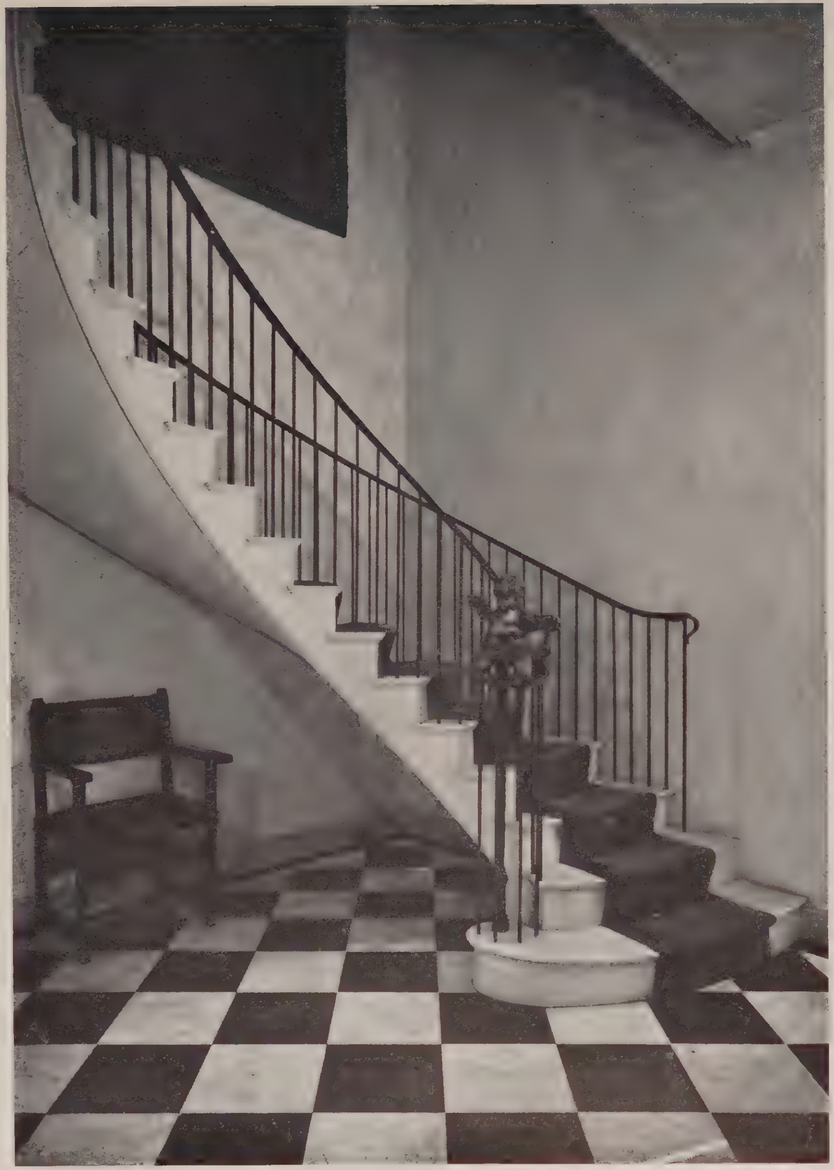
WALKER & GILLETTE, ARCHITECTS



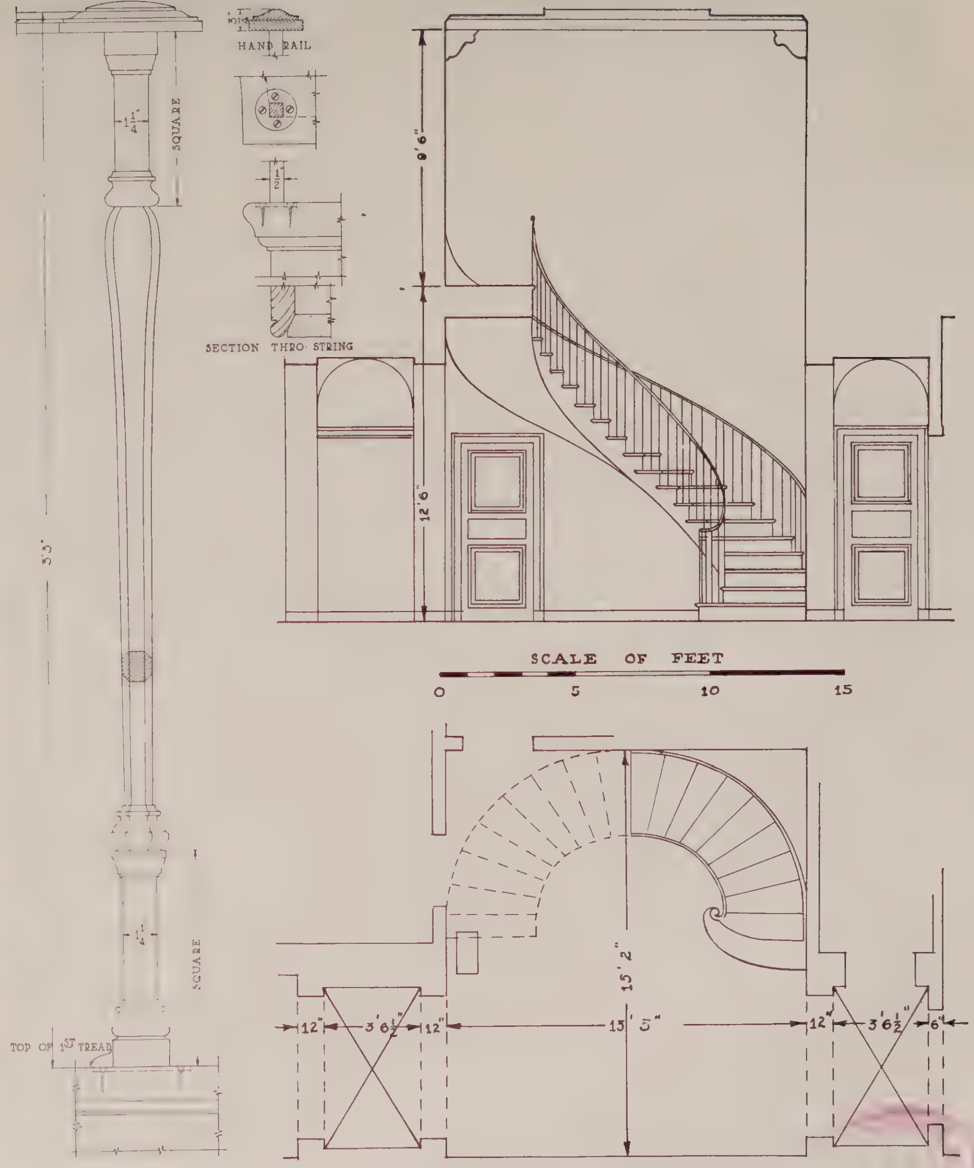
Curved stairway projecting from wall; balusters of delicate cast iron; handrail black velvet covered

HOUSE OF ALBERT K. WAMPOLE, ESQ., GUILFORD, MD.

MOTT B. SCHMIDT, ARCHITECT



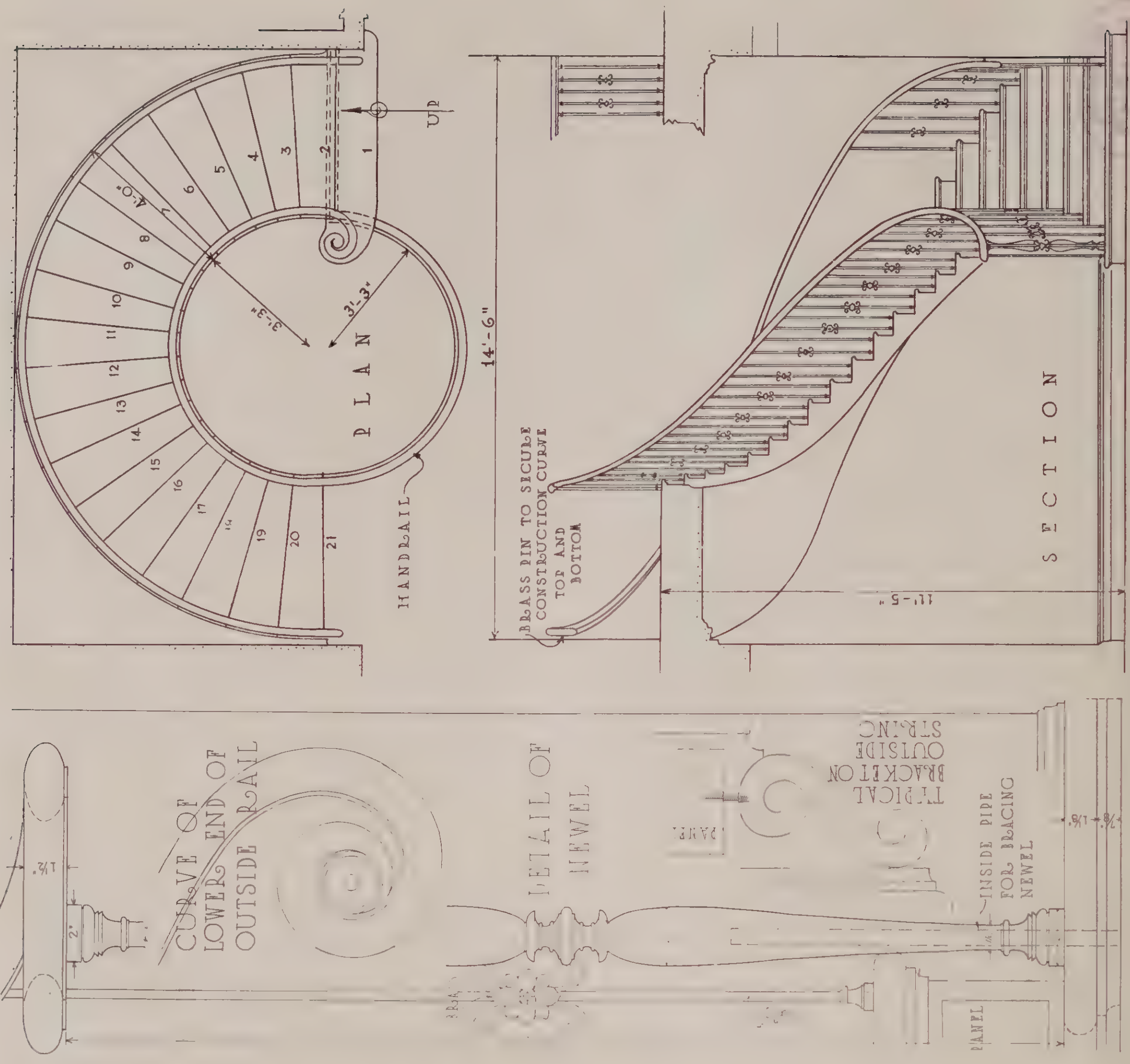
FREE-STANDING CURVED STAIRWAY IN A SQUARE WELL



PLAN, ELEVATION AND DETAILS OF BALUSTRADE

HOUSE OF GRENVILLE T. EMMET, ESQ., NEW YORK

MOTT B. SCHMIDT, ARCHITECT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3'-3"
3'-3"
PLAN
HANDRAIL
14'-6"
BRASS PIN TO SECURE CONSTRUCTION CURVE TOP AND BOTTOM
SECTION
11'-5"
CURVE OF LOWER END OF OUTSIDE RAIL
1½"
2"
DETAIL OF NEWEL
TYPICAL BRACKET ON OUTSIDE STRING
PANEL
INSIDE PIPE FOR BRACING NEWEL
PANEL
⅞
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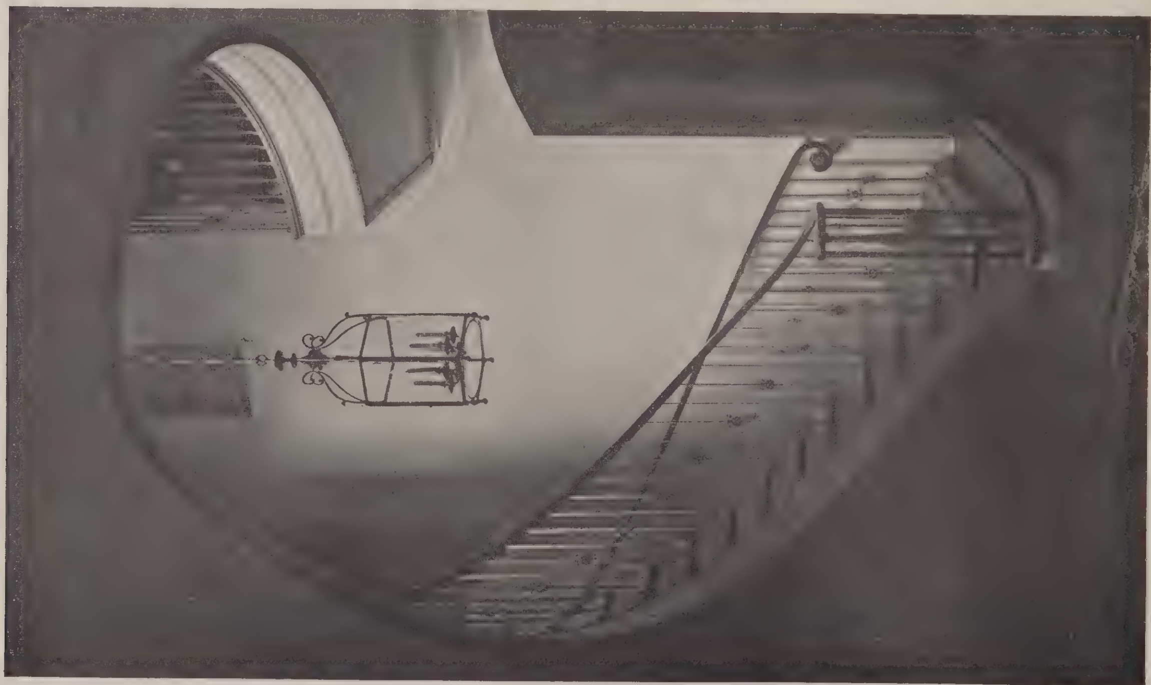
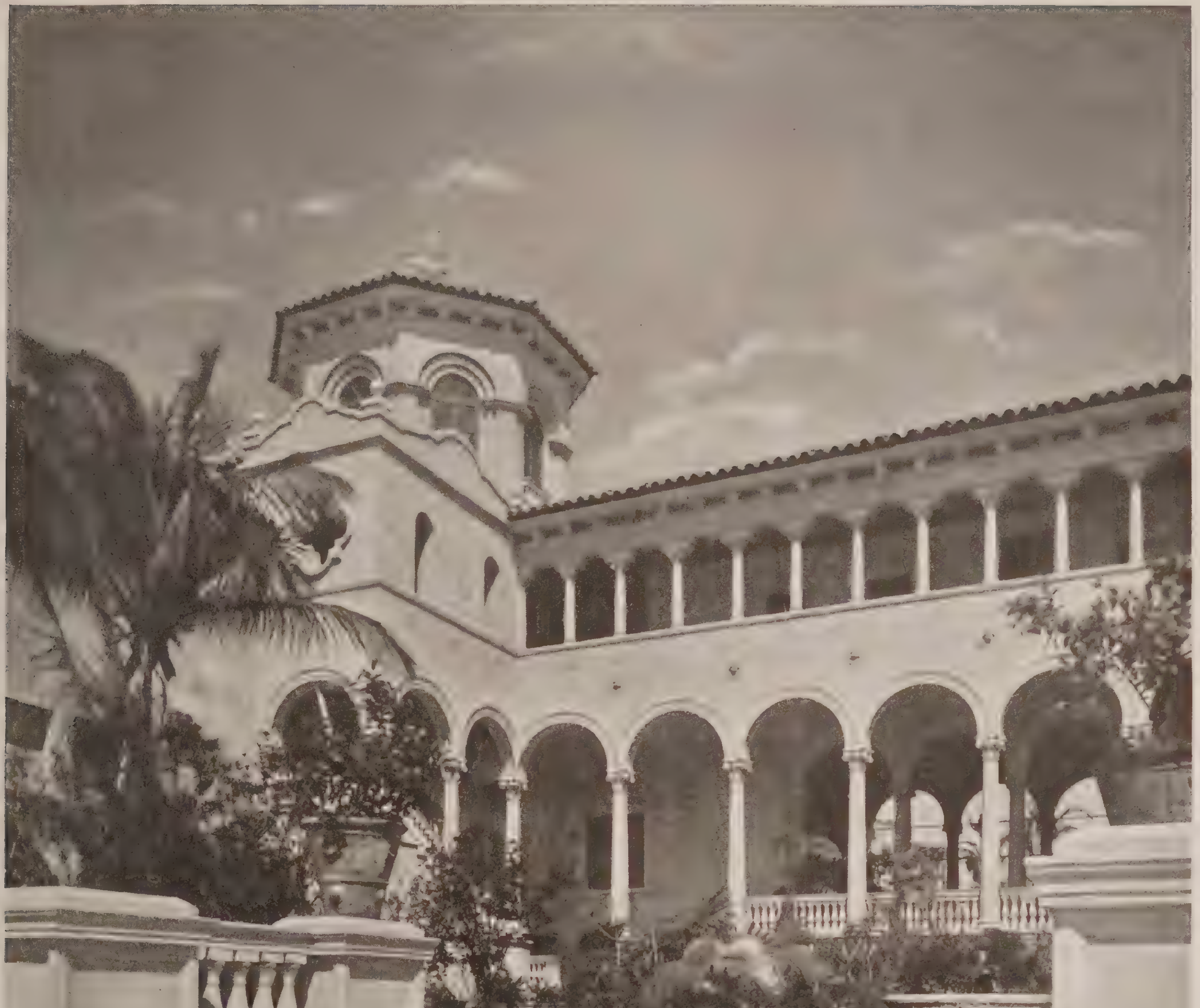
PLAN, ELEVATION AND DETAILS OF BALUSTRADE



CURVED STAIRWAY IN A SQUARE WELL

HOUSE OF ROBERT L. BACON, ESQ., WESTBURY, N. Y.

JOHN RUSSELL POPE, ARCHITECT

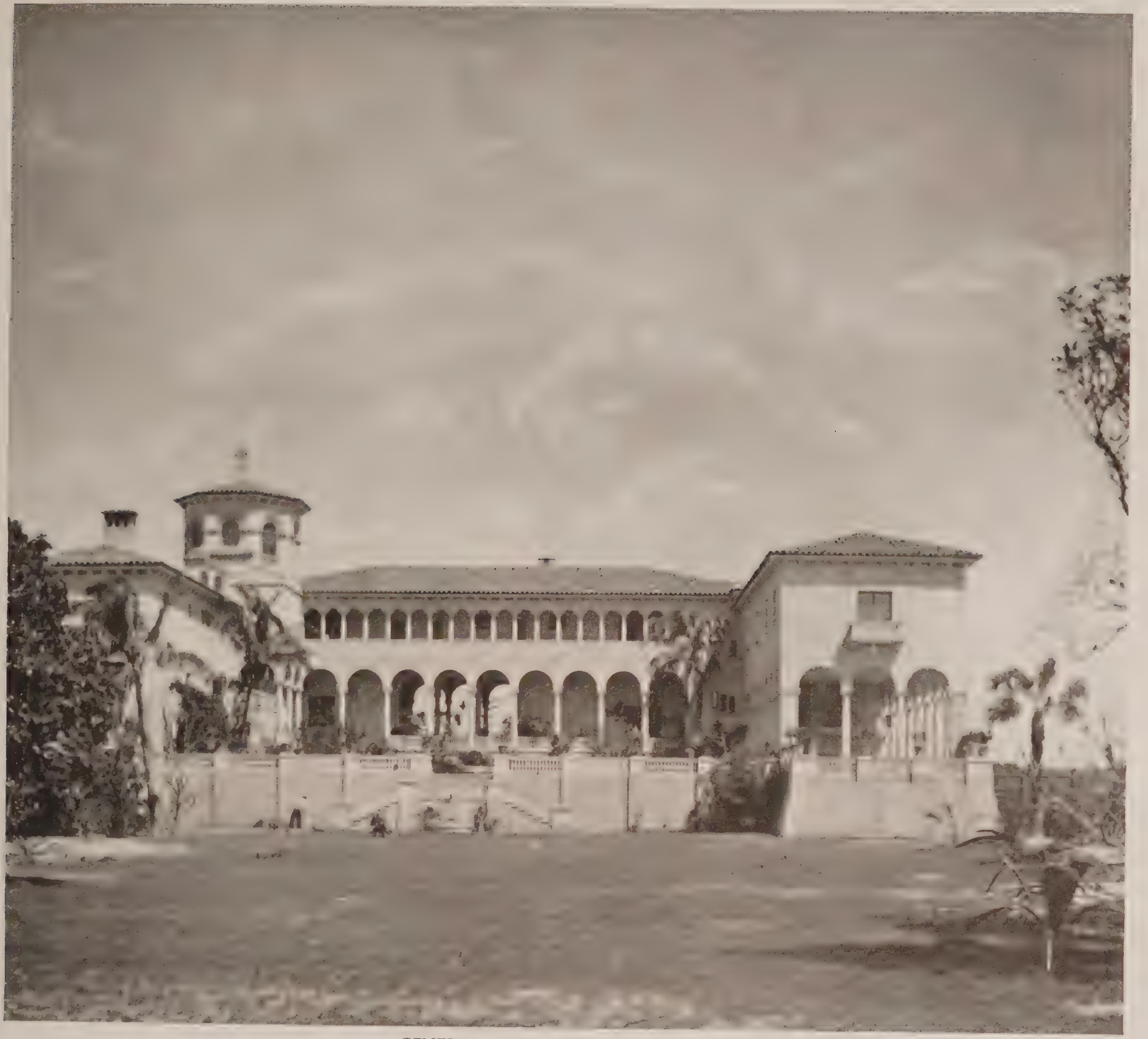


Photos by F E Geisler

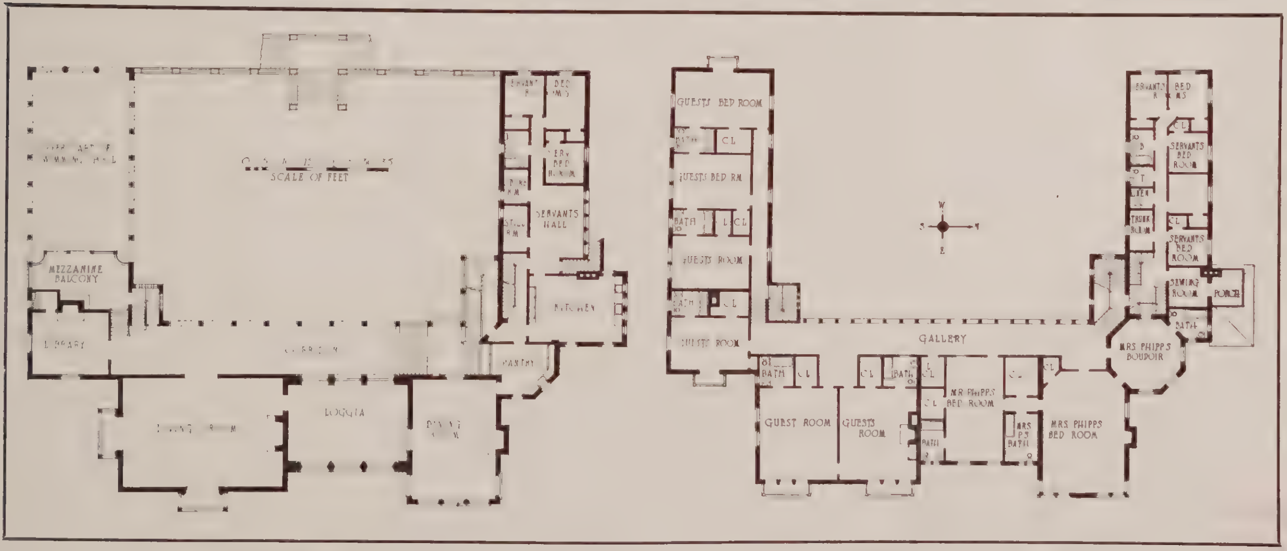
DETAIL OF COURT FRONT

HOUSE OF J. S. PHIPPS, ESQ., PALM BEACH, FLA.

ADDISON MIZNER, ARCHITECT



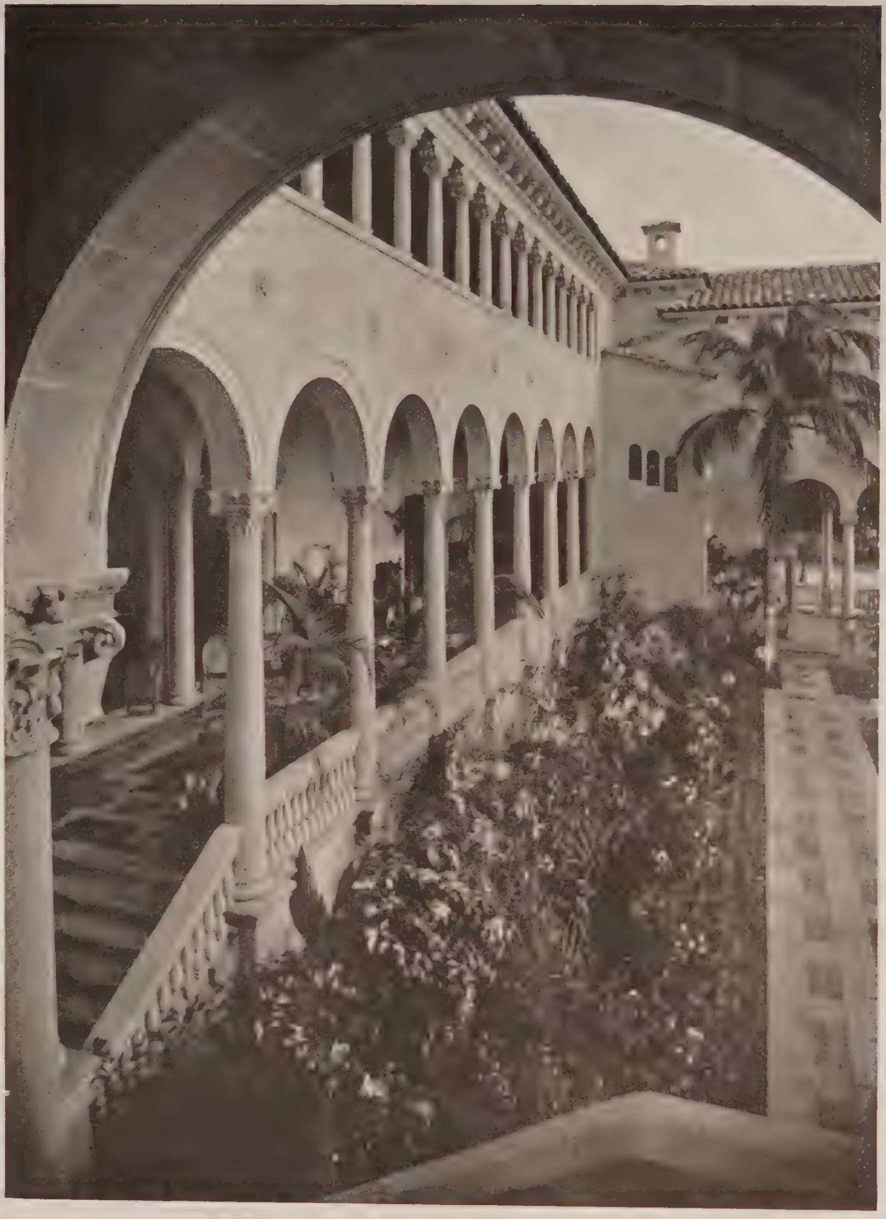
GENERAL VIEW OF ENTRANCE FRONT



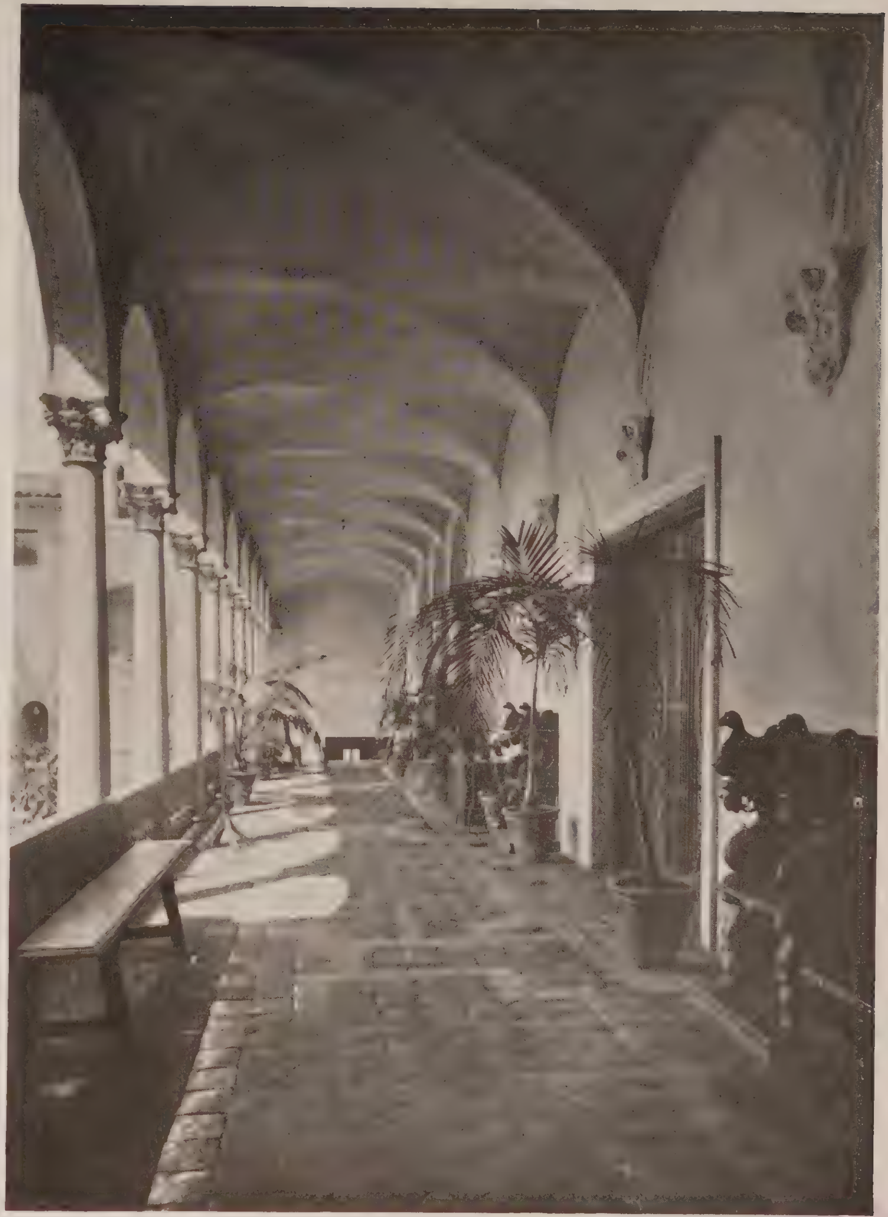
FIRST FLOOR PLAN SECOND FLOOR PLAN

HOUSE OF J. S. PHIPPS, ESQ., PALM BEACH, FLA.

ADDISON MIZNER, ARCHITECT



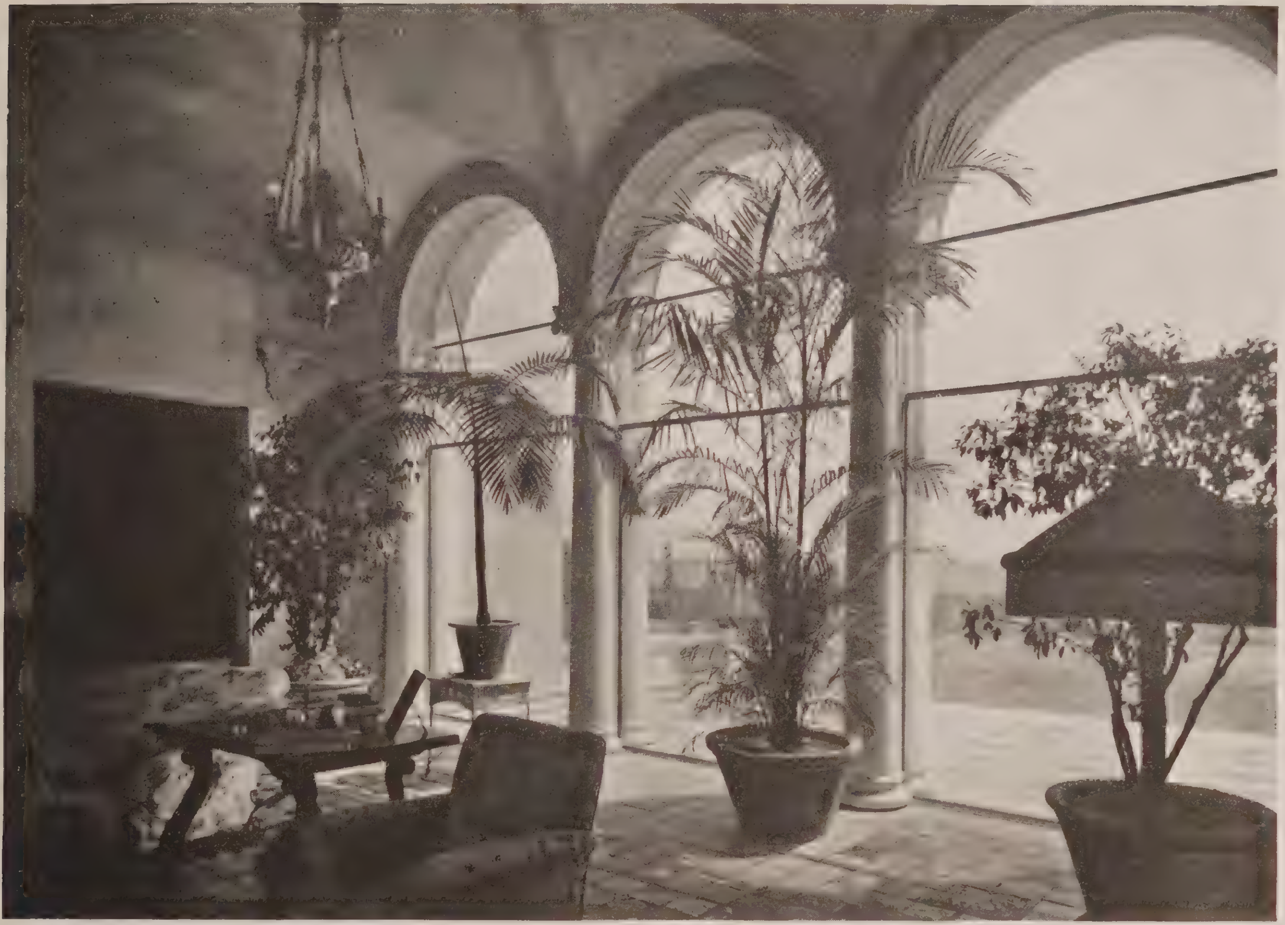
VIEW ACROSS COURT



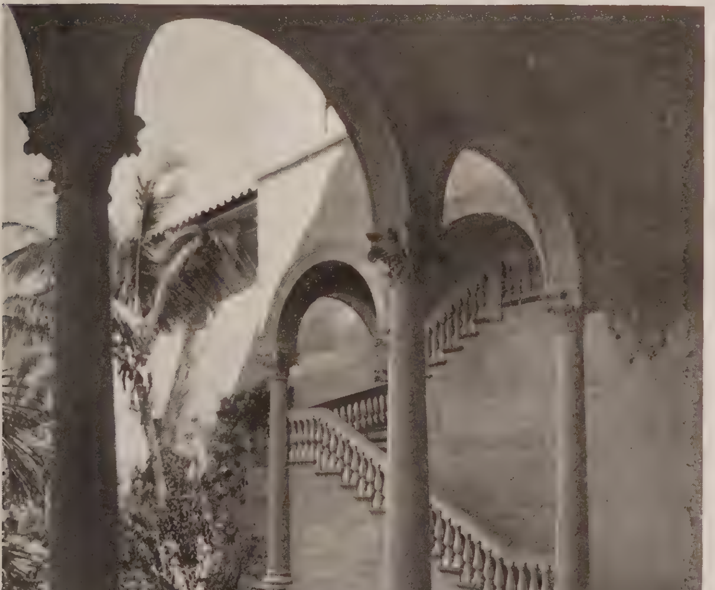
FIRST FLOOR ARCADE

HOUSE OF J. S. PHIPPS, ESQ., PALM BEACH, FLA.

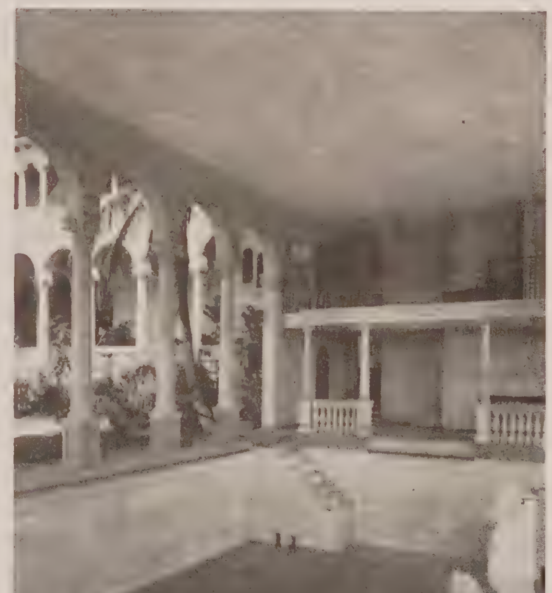
ADDISON MIZNER, ARCHITECT



VIEW IN LOGGIA



EXTERIOR STAIRCASE FROM ARCADE

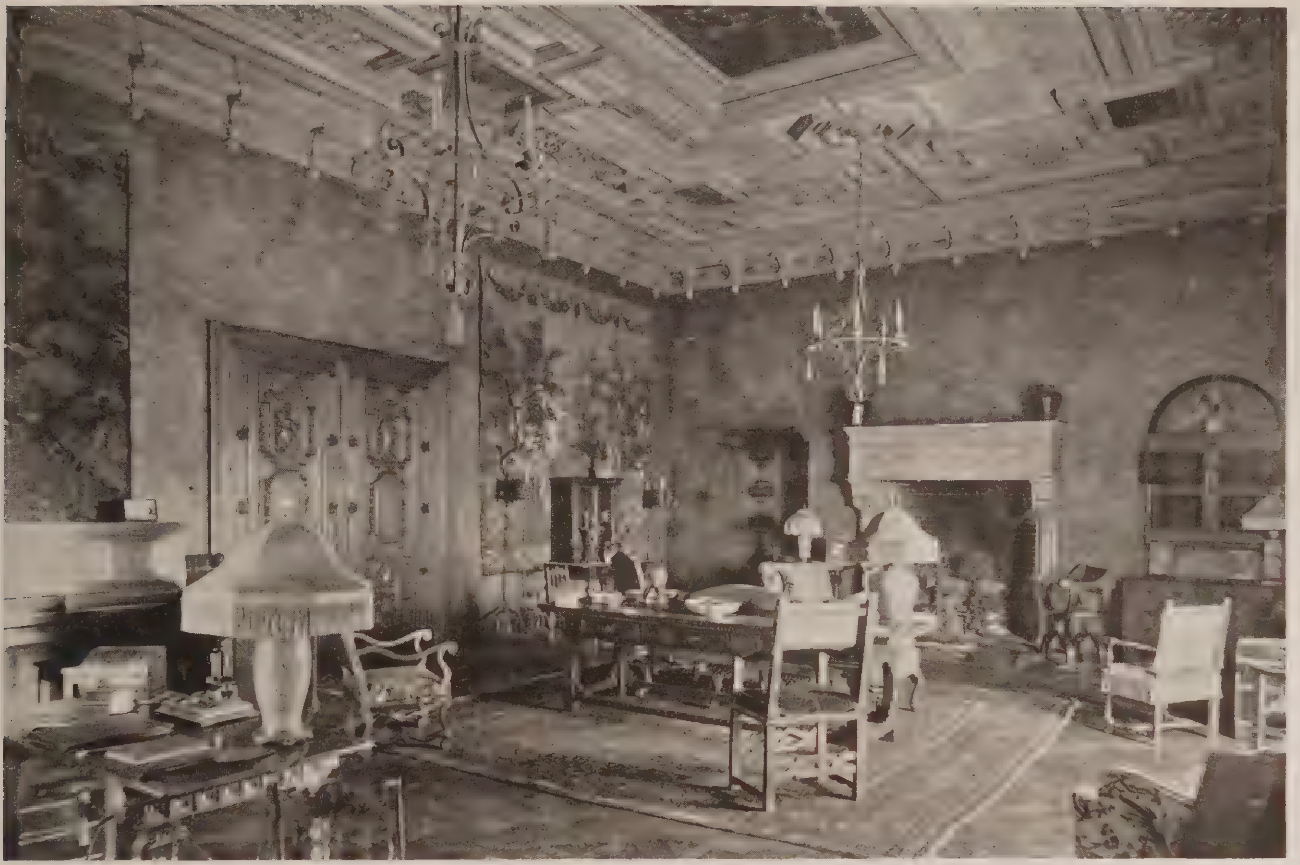


SWIMMING POOL

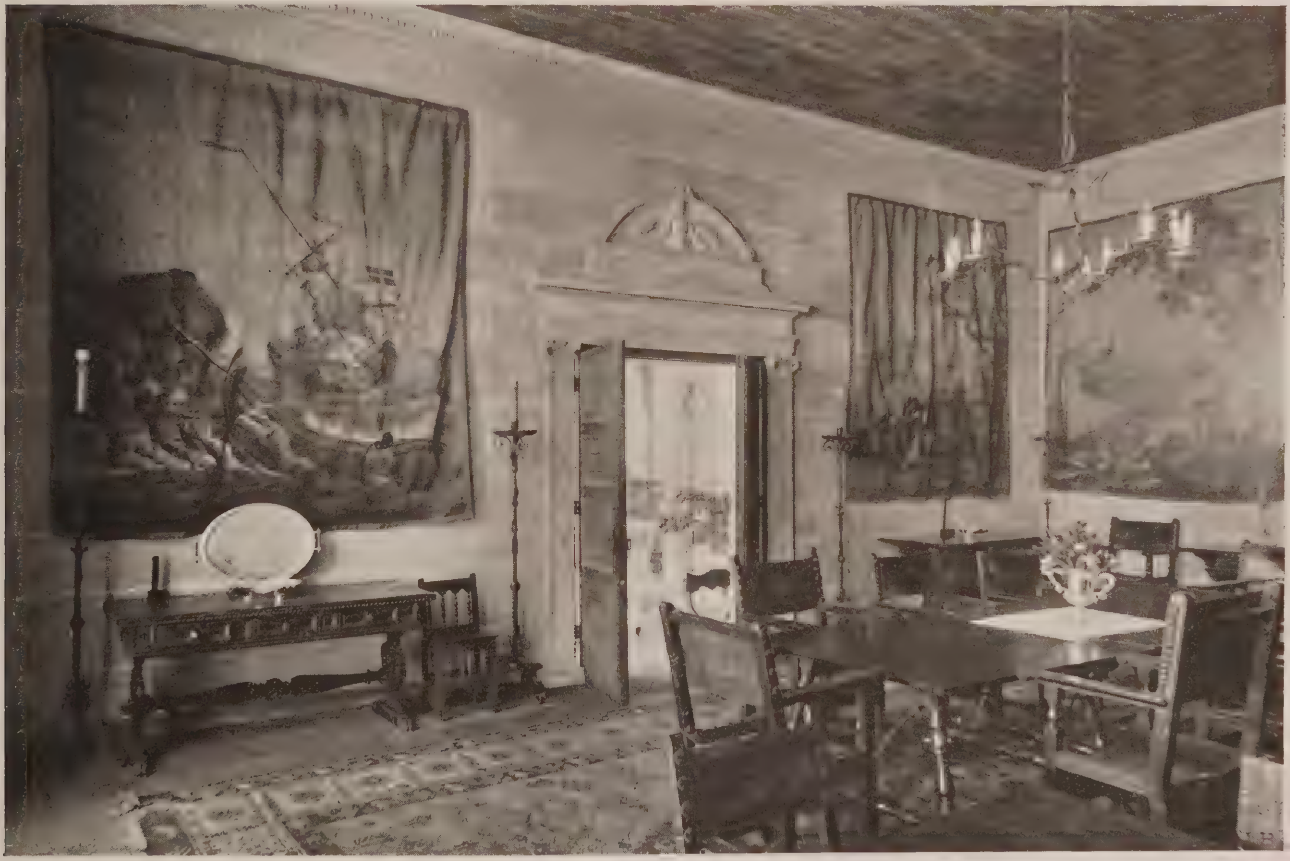
STON
BL
LIBRA

HOUSE OF J. S. PHIPPS, ESQ., PALM BEACH, FLA.

ADDISON MIZNER, ARCHITECT



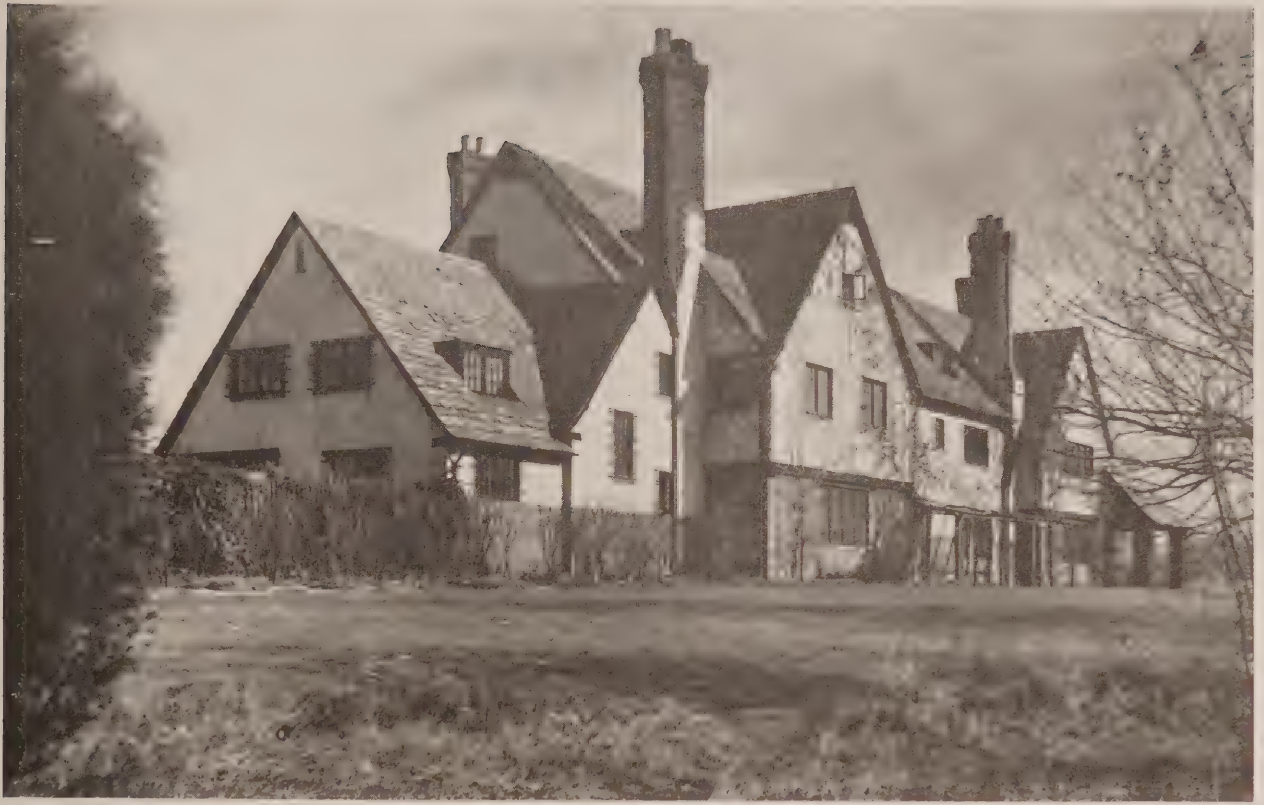
LIVING ROOM



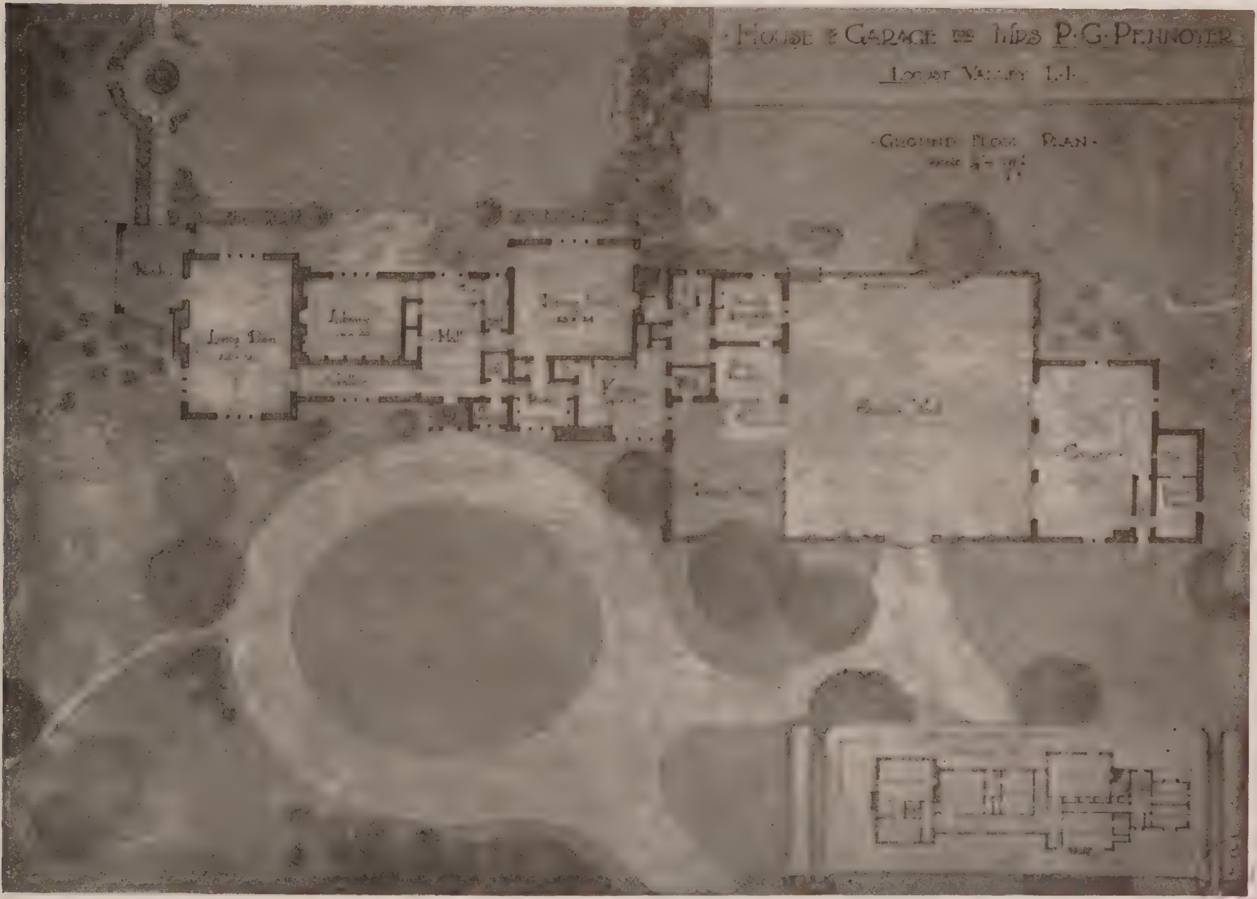
DINING ROOM

HOUSE OF J. S. PHIPPS, ESQ., PALM BEACH, FLA.

ADDISON MIZNER, ARCHITECT



GENERAL EXTERIOR OF "ROUND BUSH"

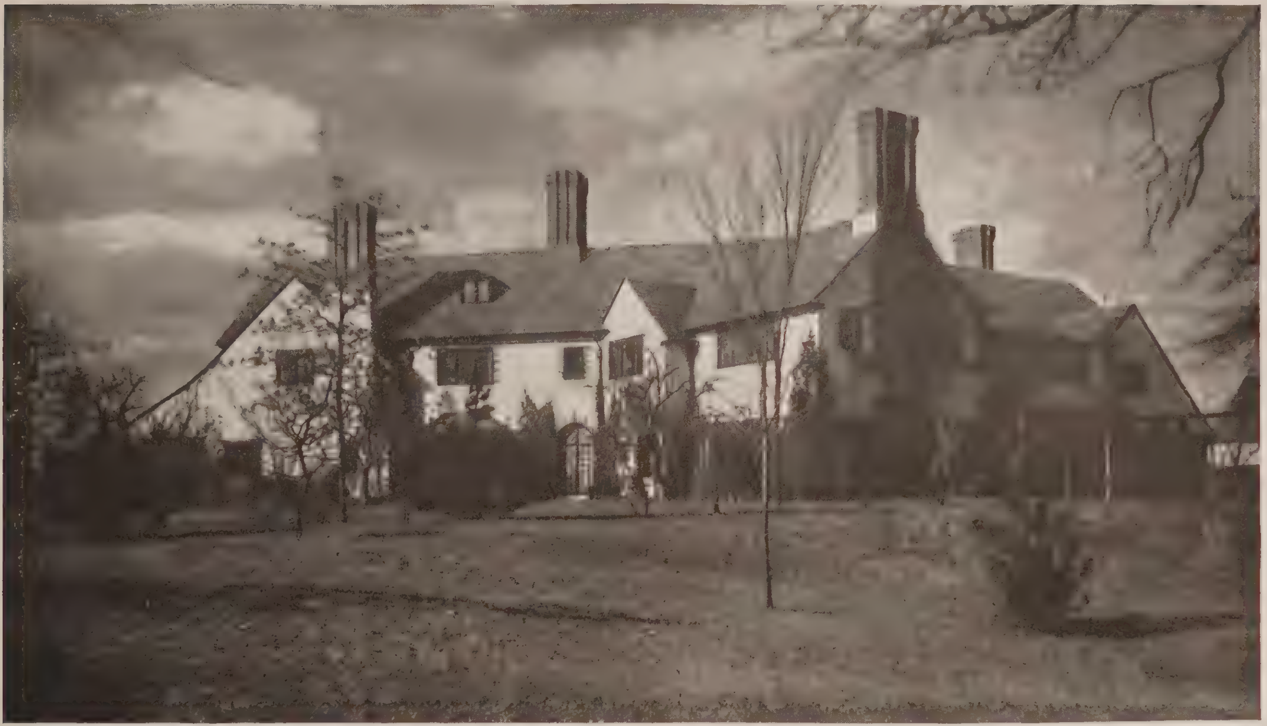


Photos by G. H. VanAnda

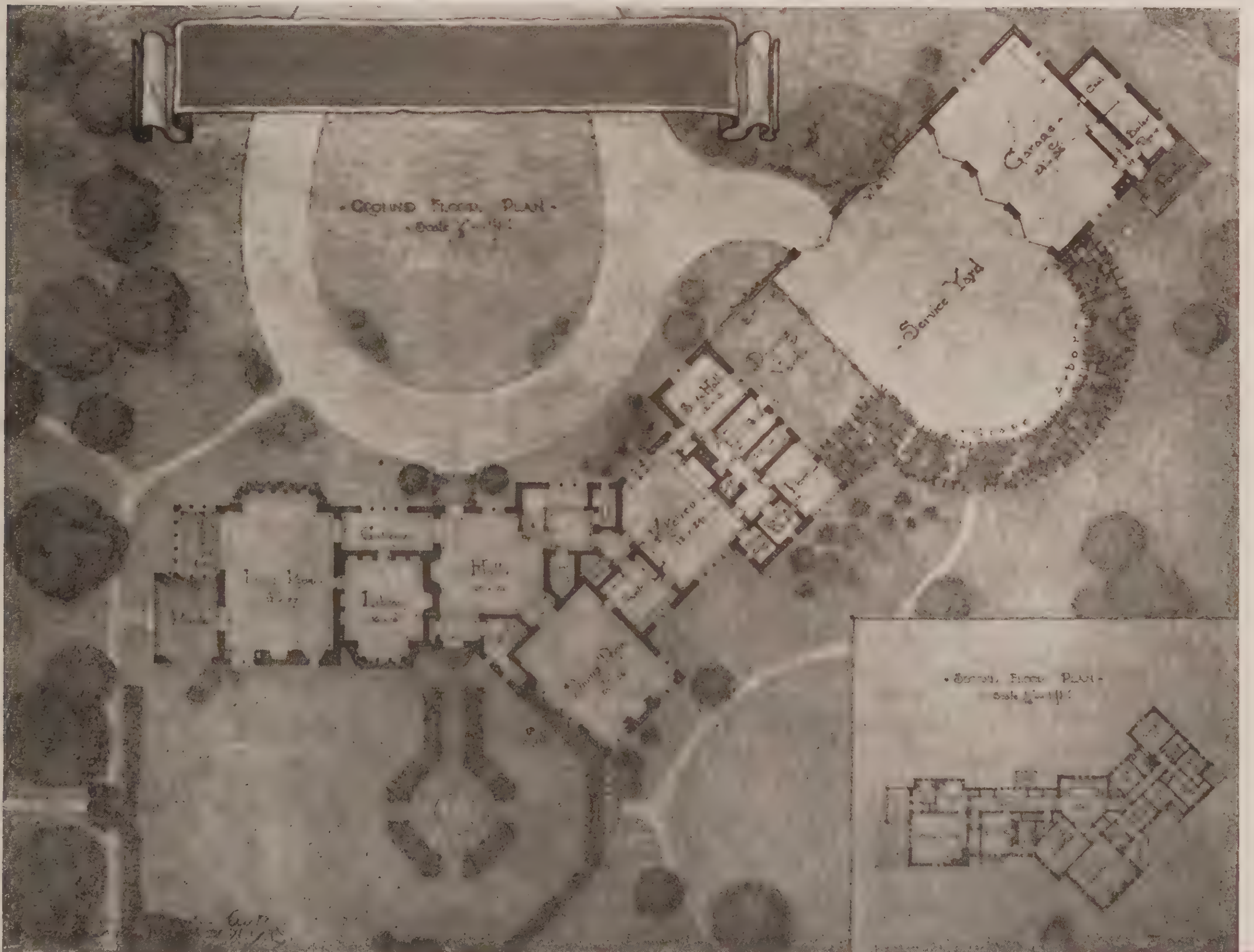
FLOOR PLANS OF "ROUND BUSH"

TWO HOUSES AT LOCUST VALLEY, N. Y.

GOODWIN, BULLARD & WOOLSEY, ARCHITECTS



GENERAL EXTERIOR OF "APPLE TREES"

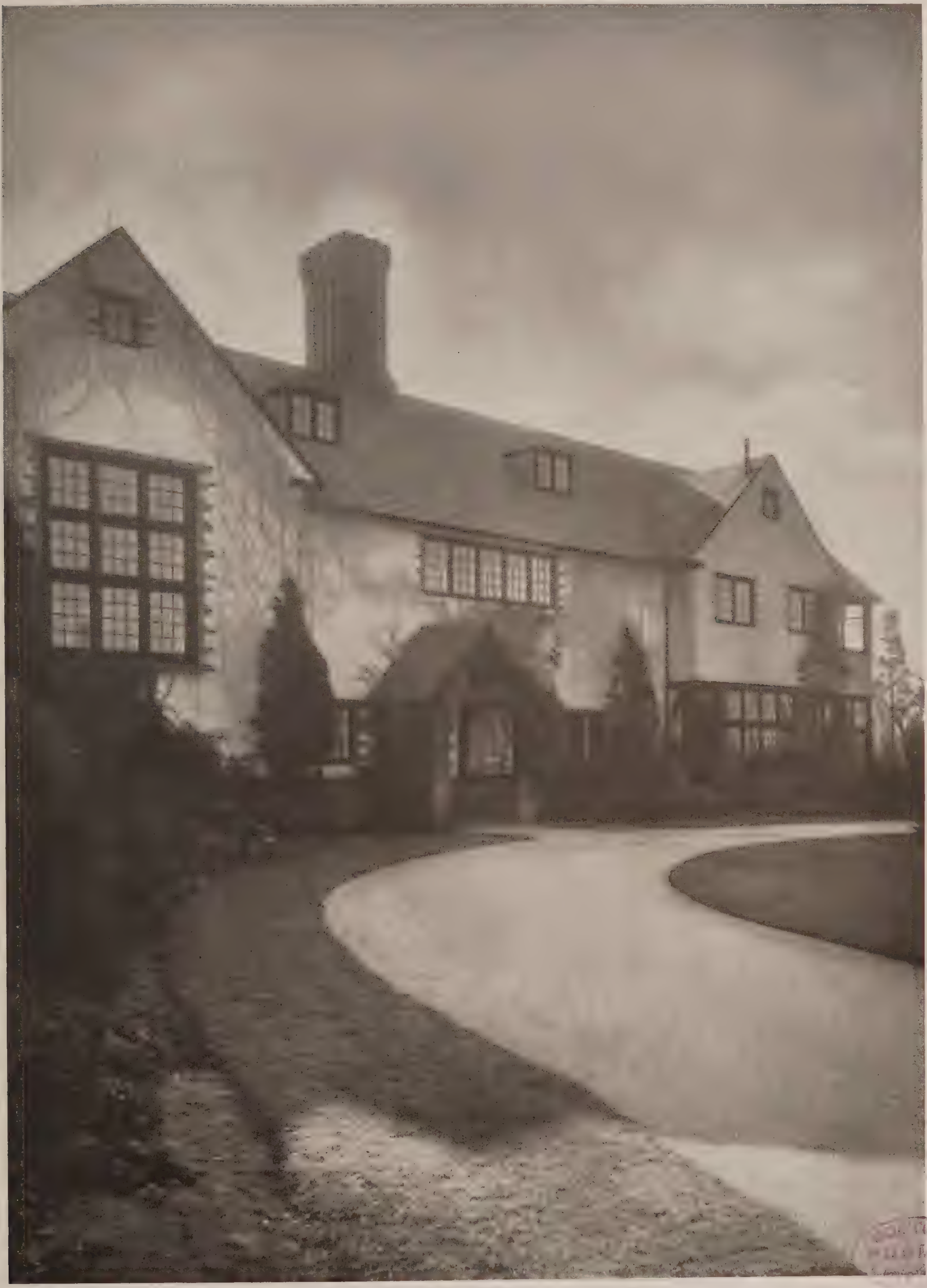


FLOOR PLANS OF "APPLE TREES"

TWO HOUSES AT LOCUST VALLEY, N. Y

GOODWIN, BULLARD & WOOLSEY, ARCHITECTS

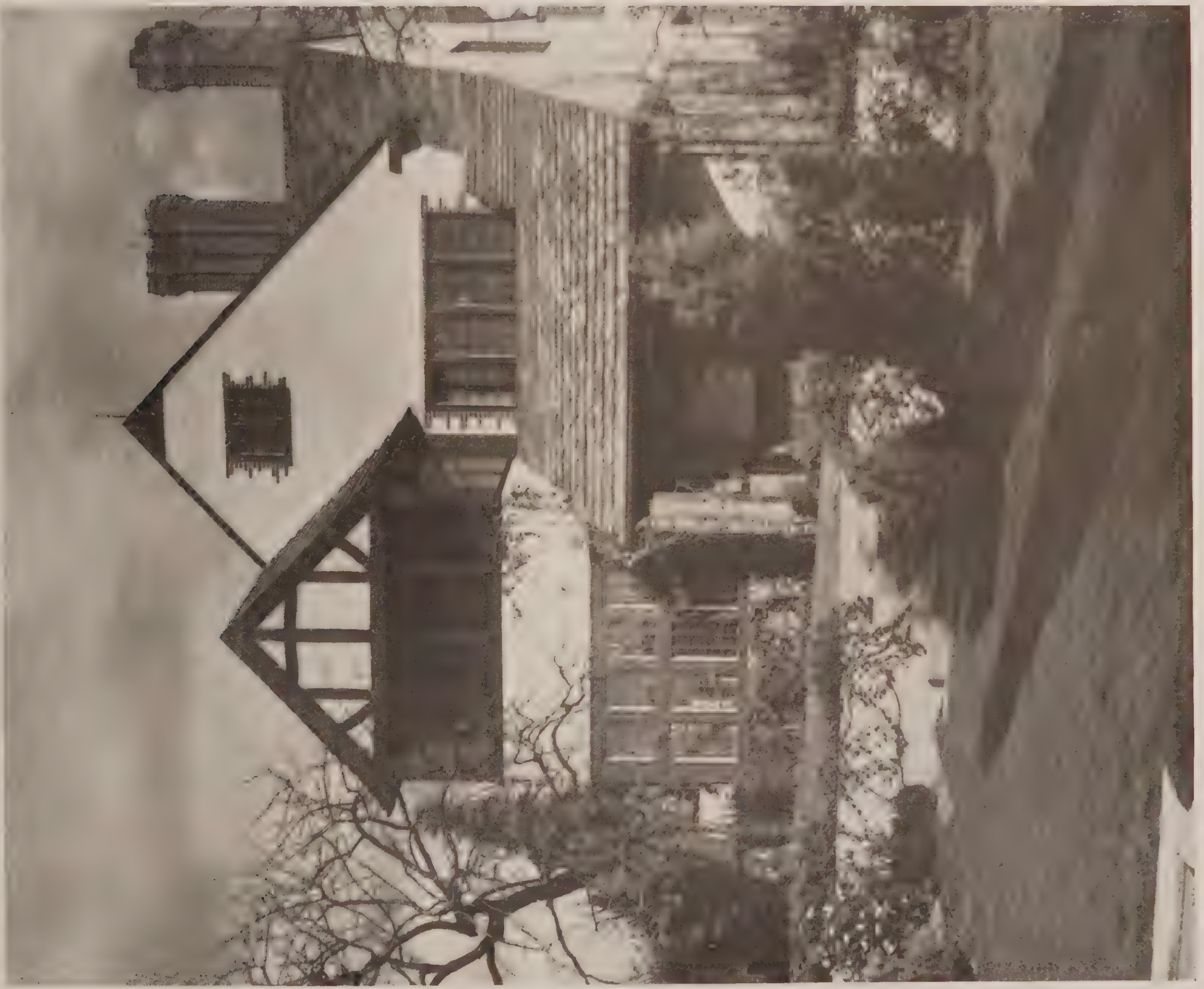
BOSTON PUBLIC LIBRARY



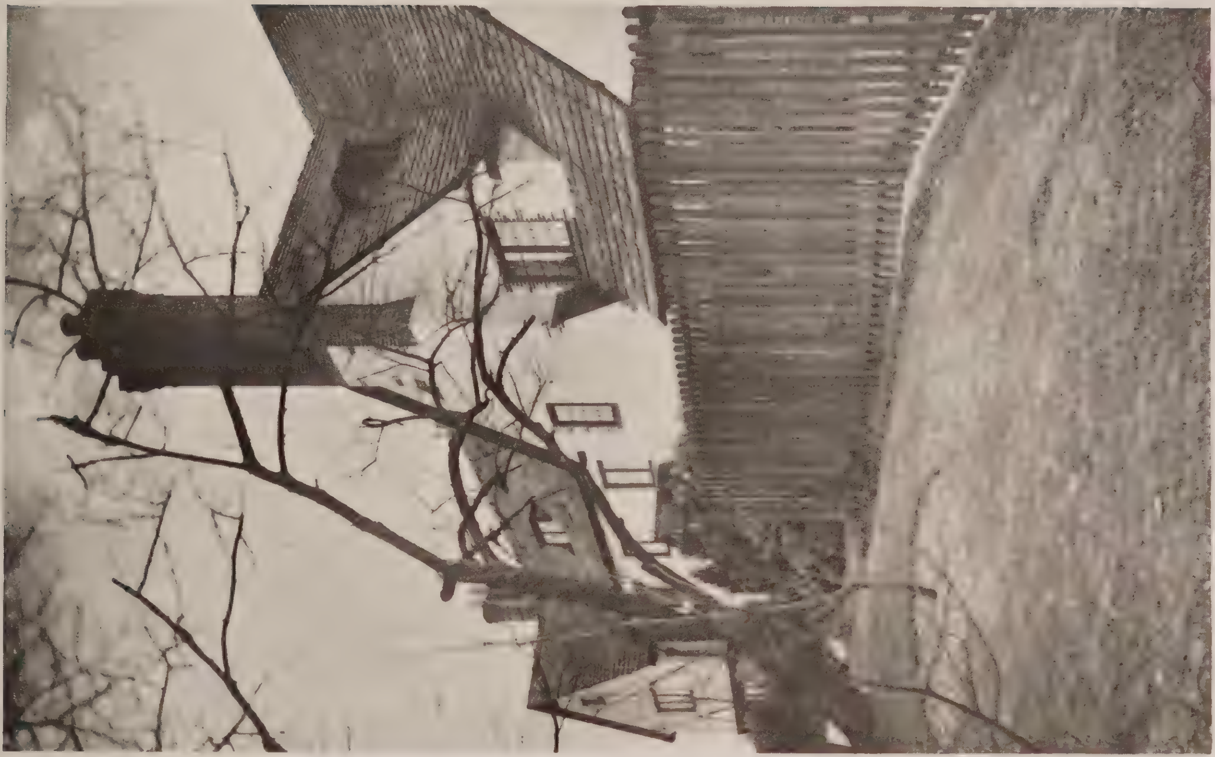
ENTRANCE FRONT OF "APPLE TREES" FROM DRIVEWAY

TWO HOUSES AT LOCUST VALLEY, N. Y.

GOODWIN, BULLARD & WOOLSEY, ARCHITECTS



GARDEN END OF "APPLE TREES"



ENTRANCE FRONT OF "ROUND BUSH"

TWO HOUSES AT LOCUST VALLEY, N. Y.

GOODWIN, BULLARD & WOOLSEY, ARCHITECTS

BUSINESS & FINANCE

C. Stanley Taylor, *Editor*

Business Factors in Architectural Practice

III. THE FINANCING OF HOTEL AND APARTMENT BUILDINGS

Editor's Note: The purpose of this article is to analyze and classify the various sources, forms and conditions affecting the provision of mortgage and equity money covering the cost of land and building operations. Apartment and hotel buildings are considered jointly because of the similarity of practically all phases of financing such operations.

IN considering the financial aspects of any speculative or investment building operation, it may be generally assumed that the primary objective of all financing activity is to obtain the land and completed building with the smallest possible cash investment as equity. Money invested in apartment and hotel building operations is primarily for the purpose of developing a speculative profit on the sale of the building, or to provide an investment which will pay a comparatively high percentage on the principal. This investment is made on the basis of the rental-earning capacity of the building, and it is obvious that with the net income as a fixed quantity any decrease in the amount of equity investment required will bring a proportionate increase in the percentage of the net earnings. The basic consideration, therefore, becomes a comparison between the cost of obtaining financial assistance in the form of mortgage loans and other credit extensions as against the increased earning power of the net investment. If money can be borrowed at 6 per cent and used to earn a considerably higher percentage, it is obviously good business and also serves to decrease the amount of money it requires on a straight investment basis. We may, therefore, define the basic financing objective of hotel and apartment building operations as being to obtain the most liberal possible financial aid at the lowest cost consistent with its speculative and investment earning power.

Considered from a practical viewpoint, the architect can aid materially in assisting the owner to attain this objective by designing a building which will appeal to tenants and offer strong competition with other buildings of similar type in the locality. He may also introduce the practical factors of plan economy and efficiency, provide every possible foot of rentable space at the lowest possible cost consistent with quality. The architect may also present in the form of sketch plans and outline specifications a visualization of the completed project which will bear importantly on mortgage loan decisions and preliminary appraisal valuations. With this thought in mind consideration may be given to the various elements of financing with which the architect who designs such building projects should be familiar.

The building and permanent first mortgage is the form most generally used in these and other types of building operations. No detail description of this method is necessary, but it is well to note that normal channels for such loans are savings banks, life insurance companies, trust companies, estates, and often through attorneys who make loans for clients. Under the conditions of present building costs the average amount of mortgage money payable on this basis approximates 50 per cent of the cost of the appraised valuation of land and building, which will usually average enough to provide close to 60 per cent of the actual cost of the operation. The costs of obtaining this money average from 1 to 5 per cent, depending on the customary charges of the loaning institution and whether or not the loan is obtained through the services of a mortgage broker. If a mortgage is obtained directly from a savings bank or similar institutions the cost does not usually run over 1 per cent of the principal. Brokerage charges add from 1 to 2 per cent, and other fees may be introduced under individual considerations.

A second form under which more liberal loans are usually available introduces the element of amortization. In an ordinary type of first mortgage financing the entire principal becomes due in a definite period of three, five or more years. The amortization feature involves the reduction or paying off of the principal in stated annual amounts. In this field there are a number of companies making a specific business of providing mortgage loans by the sale of bonds through the public or by other forms of investment securities which provide the necessary money to be loaned on first mortgage under an amortization plan. From these companies it is usually possible to obtain more liberal assistance in the form of first mortgage loans than is ordinarily available through regular channels. The loan is usually made on a basis which calls for the repayment of principal at the rate of 10 per cent per year for a period of ten years, which means that after the first year or two the principal is reduced to a most conservative basis. Again, it is evident that organizations specializing in mortgage loans can and do maintain expert appraisal departments capable of analyzing plans and conditions and suggesting changes if necessary which serve to safeguard the entire investment and render a collateral more sound than it might be under casual appraisal for a lower ratio of mortgage financing. Through these specialized channels it becomes possible to develop many building operations which normally could not be undertaken because of the lack of sufficient capital, and the opinion of such mortgage loaning companies as to the investment qualifications of a specific building project is of considerable value as a test of its soundness.

In addition to the two general forms of first mortgage loans already described there are occasional methods introduced such as the direct sale of mortgage bonds to the investing public. This has been tried with fair success by building owners in structures in some of the larger cities, but general experience shows that the cost of direct mortgage bond sale to the public is prohibitive for the individual, and usually this cost is greatly underestimated. The only successful mortgage companies are those which have over a period of years maintained extensive sales machinery, with consistent offerings to the investing public where confidence has been established through the years of safe handling of the public's money in this investment field.

Another interesting service which has been casually employed for many years and which recently has become more extended in larger cities consists of purchasing any piece of land on which an owner is desirous of building, providing him with the necessary building loan, and allowing the land with a profit to be subordinated to a permanent first mortgage obtained after the building is completed.

Second Mortgage Financing

Practically all speculative and investment building operations carry second mortgage financing where it is obtainable. There are at least four generally used methods of arranging a second mortgage loan. The first of these is an arrangement with the land owner at the time of its purchase to subordinate it to the building loan and the permanent first mortgage, giving him a second mortgage for a definite period of years or payable under amortization arrangement. This method of purchasing land is introduced for the purpose of reducing the amount of the original investment, and it is customary to pay somewhat more for the land under this arrangement than if it were an outright cash purchase. If sufficient cash is available it is always more satisfactory to purchase the building site for cash and to present it free and clear under actual ownership when application is made for building and permanent mortgage loan. The method of subordinating the land cost is used extensively, however, because it makes possible many transactions through the provision of this additional element of credit which often represents 15 to 20 per cent of the total cost of the transaction.

A second method is simply borrowing on a straight second mortgage basis. This type of loan is usually expensive in first costs as the second mortgage market demands anywhere from 10 to 18 per cent discount in addition to short term and often amortization features. The second mortgagee will insist that the first mortgage be conservative, usually not over a 50 per cent net valuation, and the loan obtainable usually totals about 15 per cent, so that in this manner up to 70 per cent of the cost of land and building may be obtained on a credit basis, which, if the land has been purchased outright, usually provides enough cash for the entire cost of building construction.

There are several modified forms of obtaining second mortgage financing or its equivalent. One interesting method, when money is needed at the termination of building construction to pay off final costs, is that of borrowing against rentals. In this type of transaction an assignment of the rentals or a proportion of the rentals is made to cover the amount borrowed. Another method is to arrange with the building contractor and with others who provide service (as described in the preceding article in this series) to take part of their profits in the form of deferred payments, constituting the second mortgage claim against the property.

The sources of obtaining second mortgage money cannot be so definitely known as in the case of first mortgage money. There are practically no mortgage institutions primarily developed to deal in second mortgage loans. This money is usually obtainable through individuals who specialize in making loans of this nature, and through attorneys or brokers whose clients make this type of investment because of its more attractive percentage of return.

Mortgage Applications and Appraisals

It is a fact which has often been demonstrated that on a large building project the method of presenting a mortgage application has a decided effect on the ultimate decision. By this it is not meant that elaborate plans and perspective must be presented, but that the mortgage application should be accompanied by sufficient data to make easy a thorough visualization of the completed project both physically and in detail of operation costs, rental income and property valuations. It is particularly important that a good architectural presentation be made, especially at this time, when it is a recognized fact that all new buildings will ultimately be forced into competition as the supply approximately equals the demand for rentable space in the different classifications.

When appraisals are to be made covering proposed building projects, the only intangible element in the mind of the appraiser is the character of the proposed new structure. Assuming that the purpose and location of the building are satisfactory, the only question lies in the efficiency of the building itself and its consequent earning capacity. A good perspective and clearly drawn floor plans aid materially in this consideration. These plans should be developed so that they will meet the test of the building manager's opinion, and in a manner which provides a logical basis for establishing favorable figures of rental income and all possible net profit.

A mortgage application accompanied by data which makes it easy to understand the entire project is almost invariably acted upon more quickly and more liberally than where it is necessary to spend considerable time in analysis. The application for a mortgage loan must be accompanied by specific information regarding the purpose and anticipated earning capacity of the building, which will include a schedule of rents and operative income. In establishing the factors of operating expense a clear division should be made between the costs of maintenance, upkeep and repair. Maintenance includes all direct operating expenses; upkeep includes items of expenditure for purposes of preventing deterioration; repair includes cost of actual replacements or reconditioning of worn or broken structural parts or equipment.

An important element of consideration as affecting building investments and mortgage appraisals is the factor of depreciation which in itself is divisible into two classes—physical depreciation and depreciation of value due to a change in local conditions. Since the establishment of the income tax, in which depreciation and obsolescence are officially recognized, this subject is of particular importance and should be carefully considered in analyzing the financial problems affecting any investment building project. It is quite necessary to realize that the valuable life or period of existence of a building is limited according to the type of construction, and that in some manner a sinking fund must be established to write off the original investment in accordance with this logical period of life.

Some very interesting studies of this question have been made by Richard M. Hurd, author of "Principles of City Land Values," and by Reginald P. Bolton, author of "Building for Profit." Mr. Hurd, in his analysis of the duration of life of buildings of certain types, draws his proportions in accordance with the cheapness or excellence of their general construction. This tabulation presents briefly Mr. Hurd's conclusions on this question. In this table will be found the estimated terms of useful life of various types of buildings, together with the rates and terms of proposed sinking funds which would serve to return the original investment.

Construction	Occupancy	Term of life in Years	Rate of Fund Proposed in Per cent	Term of Sinking Fund at 3 per cent in years
Cheap frame	Tenements	10–15	10–5	9–16
Cheap frame	Residences	25–30	3–2	23–31
Better class frame	Residences	50–75	2–1	31–47
Cheap brick	Tenements	25–30	3–2	23–31
Cheap brick	Residences	35–50	2–1	31–47
Cheap brick	Office buildings	25–30	3–2	23–31
Better class brick	Residences	50–75	1½–1	37–47
Good brick or stone	Office buildings	75–100	1	47

Mr. Bolton analyzes this question in a very thorough manner and one which makes it possible to establish the physical depreciation of the value of practically any building. His system of appraising the probable life of a building is to recognize that the elements involved in the building construction are more or less durable, and that the component parts of the building bear to each other a relative term of durable life. He assigns maximum longevity to the most durable elements of the combination of materials which make up the structure, weights these proportions with the relative cost, and deduces a tabulation of relative life of component parts of buildings. This interesting tabulation may be found in his book "Building for Profit," and it is interesting to present an actual example of the method of ascertaining the mean life of any building by applying these deductions. Here is an example of this application to a steel-frame office building, in which he assigns the life of 66 years to the most durable parts (foundations, steel framing, masonry, fireproof doors, etc.). In this tabulation the relative life of other components is given, together with an interesting division of costs relative to the total cost of the building:

Material	Life relative to 66 years	Cost relative to total cost of bldg.	Life times cost
Foundations	100%	5.3%	530.0
Steel framing	100	7.6	760.0
Masonry	100	33.7	3370.0
Fireproof floors	100	2.0	200.0
Ornamental iron	73	6.3	459.9
Heating	50	3.3	165.0
Plumbing	50	1.5	75.0
Electric wiring	50	2.0	100.0
Partitions	70	1.2	84.0
Joinery	70	3.4	238.0
Fixtures (plumbing)	29	12.6	365.4
Roofing (tile)	59	2.0	118.0
Plastering	54	3.8	205.2
Marble	54	9.6	518.4
Elevator	30	3.1	93.0
Hardware	37	0.5	18.5
Glass	14	1.3	18.2
Paint	10	0.8	8.0
Totals	...	100.	7327,6

Mean $\frac{7327.6}{100} = 73.276$ per cent of 66 years, or a mean life of 48.36 years.

Under this system or from general records it is possible to deduce the approximate useful life of a building for appraisal purposes. This result must of course be tempered by a consideration of the economic life of the building, or in other words its probable utility value under the changing conditions of the community. There is no given method of measuring this situation, but it is evident that it must be recognized in planning by eliminating extravagant and unnecessary expenditures and by providing a certain flexibility of plan so that the building is not limited to a specific use but may be altered for other purposes.

These conditions of the plan have a very definite effect in appraisals for mortgage loaning purposes. This is why it is difficult to borrow on special building types, such as storage warehouses, studio buildings and similar structures designed for a single purpose only. The experience of many hotels during the past few years, where it has been found necessary to relieve overhead cost by introducing stores, has shown the importance of providing in the plans for such changes, and the importance of making the general first floor level at the same elevation as the street level in order that such alterations can be made cheaply. In many large hotels today it is impossible to make store alterations because of the difference in elevations, placing of columns and other structural limitations. If proper provision has been made for expansion and changing conditions, this fact contributes strongly to the investment and collateral value of the building.

On a basis of observation, Mr. Bolton records these average periods of economic existence of buildings:

Type of Building	Life in Years
"Taxpayer"	12–15
Hotels	15–18
Apartment houses	18–21
Store buildings	21–25
Tenements and flats	25–27
Office and business buildings	27–32
Lofts and factories	33–37
Residences	37–44
Banks and institutions	44–50

The Trend Toward Quality Building

An element of rapidly growing importance in connection with the mortgage financing of buildings is the growing recognition by loaning interests of the fact that values must not only be established but maintained. This result can only be obtained by eliminating the economic waste directly chargeable to inefficient planning of large buildings and use of inferior building materials, workmanship and equipment.

This is the trend toward quality building which is impossible without the service of good architects. As we analyze the vast majority of large buildings constructed prior to 1915, the shortsightedness of false economy becomes obvious and may be measured in terms of inefficiency of purpose, coupled with an abnormally high factor of depreciation. In many instances the first mistake on the part of prospective building owners has been their failure to appreciate the value of good architectural and engineering services in the preparation of plans and specifications for investment and institutional buildings. The result has been the development of inefficient and wastefully planned buildings, affecting adversely earning power, real estate valuations, and facilities for administration.

The second element of false economy on the part of owners, a fault common to many building operators, has been the introduction of the element of cheapness in order to limit the original building investment. Architects have often experienced this condition and chafed under its burden. The owner's insistence upon the purchasing of cheaper materials and equipment, his preference for low bid contracts and sub-contractors, or his attempt to buy plans and specifications at cut rates in all cases have contributed to induce economic waste and failure of building projects.

The architect if given free rein (or perhaps full confidence would be a better term) is desirous of rendering service which will insure, in addition to attractiveness of design, an efficiently planned building, well constructed of good materials and equipped for long life utility as a satisfactory investment.

Owing to the complexity of the modern large building the preparation of plans and specifications requires not only broad knowledge and unusual skill on the part of the architect but a vast amount of detail work for which he rarely receives credit. It follows naturally that this work cannot be well done on a cut rate basis, nor can it be done by inexperienced architects. Experience has shown that an ample fee for architectural and engineering service represents the most valuable form of building investment insurance,—but the application of this principle may be carried further and applied to the element of structural depreciation and high maintenance costs. It is an interesting fact that many of our large buildings today are constructed with exteriors which are good for a century, but with interiors and mechanical equipment for a logical life of not over 20 years. This is due to the use of inferior materials and equipment.

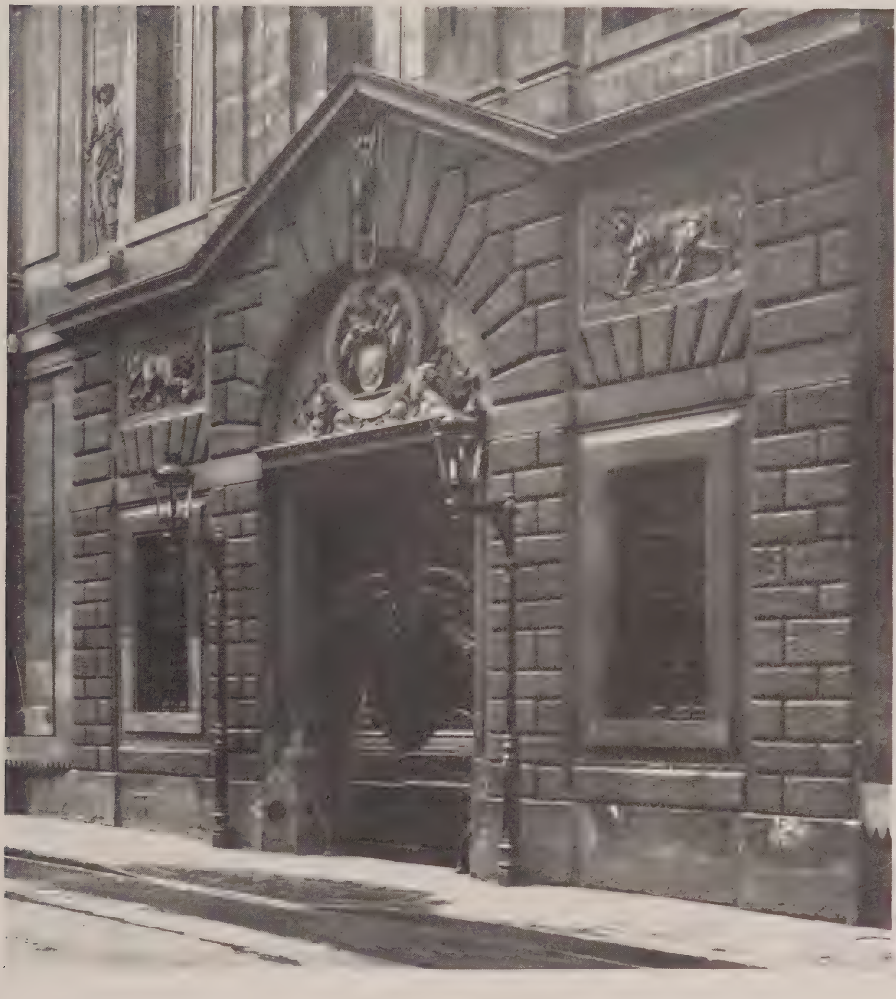
It is logical to inquire at this point why such inconsistency of practice and judgment has not long ago resulted in a pronounced attitude of building investors in favor of the architect, the good building contractor, and manufacturers of the better qualities of building materials and equipment. Two factors have influenced this situation,—first, the comparatively short period of years in which we have had an opportunity to study the performance of large buildings from the viewpoint of investment and depreciation, and, second, the absolute good fortune of building investors involved in the artificial increase in building values due to the sudden high trend of construction costs since 1915. This increase in cost of construction has by reason of comparative values greatly enhanced the value of old buildings, saving many from mortgage foreclosure and providing high investment returns where nothing but losses faced the owners previous to prevalence of this unexpected condition.

Bankers and heads of other mortgage loaning interests are rapidly realizing this condition, and are in fact constituting the greatest power of benefit to architects, good building contractors and manufacturers of dependable materials and equipment. Mortgage loaning interests are readjusting their appraisal interests and carrying out analytical studies of building plans, construction and materials. As never before, insistence is being placed on efficient planning, represented by good architectural and engineering service. The demand for long term building finance is being met by requirements of good construction which will insure the maintenance of intrinsic values. Bankers are realizing that within a few years the competition of the real estate market will be the competition of good buildings against poor buildings, and that their collateral must be safeguarded.

FRENCH RENAISSANCE DETAILS

A SERIES OF MEASURED DRAWINGS

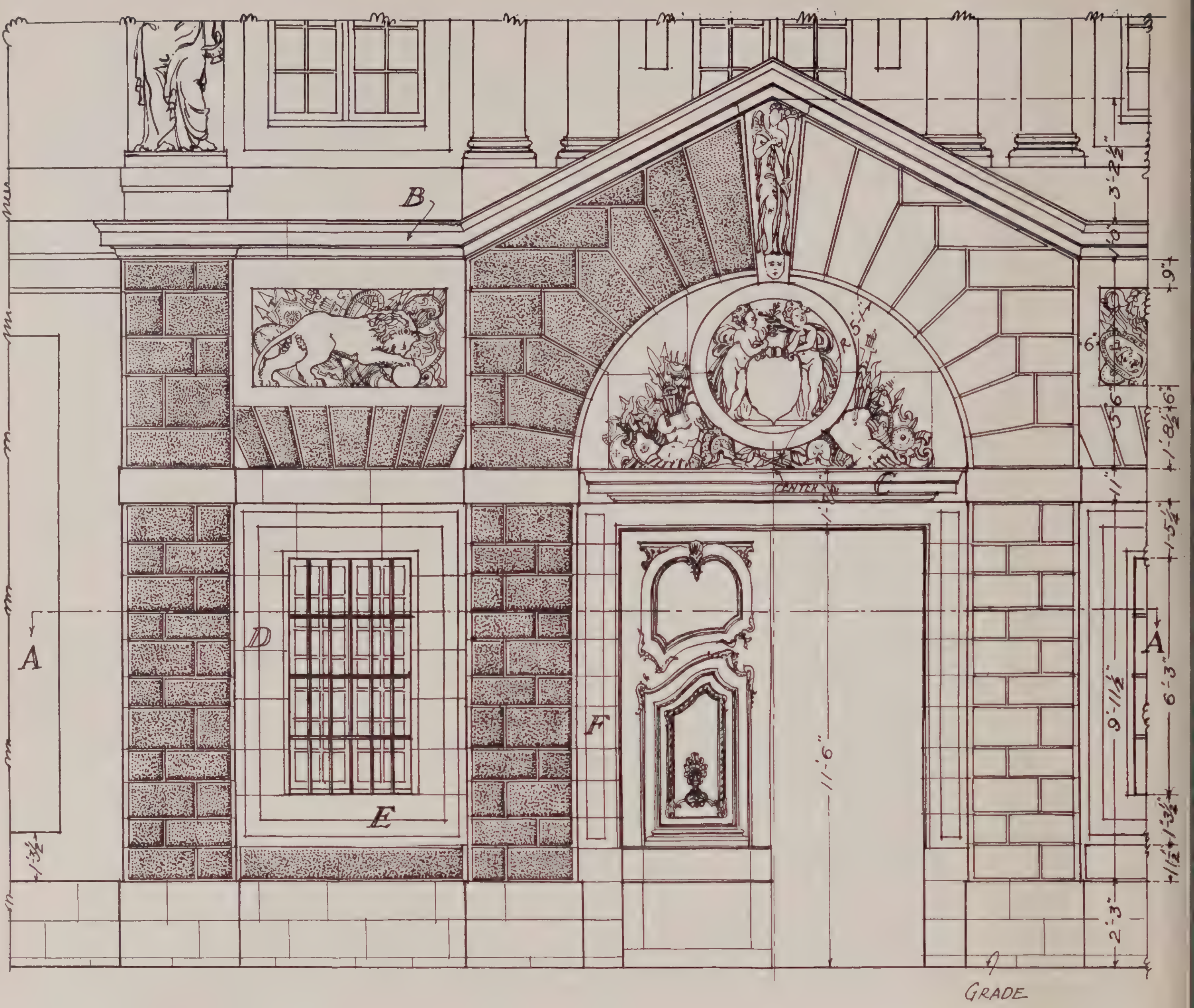
By F. NELSON BREED



CENTRAL MOTIF
MUSEE CARNAVALET, PARIS

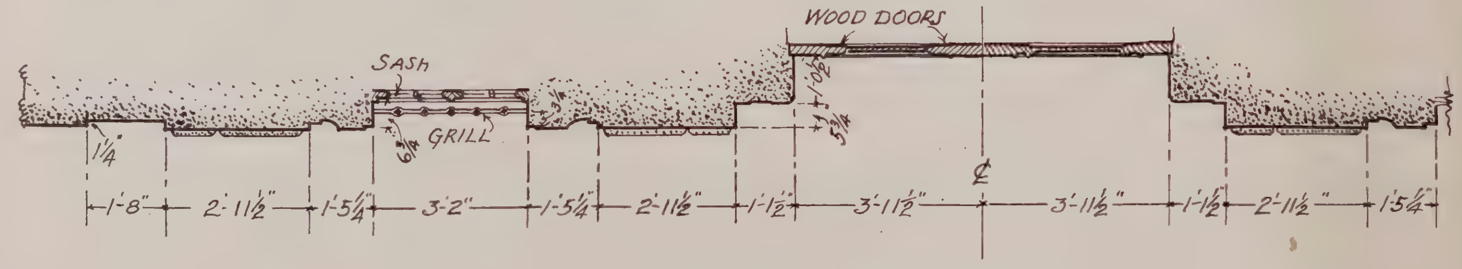
THE main entrance of this structure, one of the best buildings of its period of the French renaissance, and which at present contains some of the historical collections of the city of Paris, is part of the original structure built under the direction of Pierre Lescot as architect and Jean Goujon as sculptor. The ornament of the tympanum above the doorway, which includes the arms of the Carnavalet family, was installed shortly after 1578, and if not the work of Germain Pilon at least belongs to the school of that master. The figure of "Abundance" which adorns the keystone is by Goujon; the lions upon the panels at either side are also part of the original work, though they were formerly used within the building and were placed in their present position by Mansart during extensive alterations to the building during the seventeenth century.

The structure owes much of its present pleasing appearance to the passing of time and the rainstorms of centuries which have aged and mellowed the yellowish limestone, and to the fact that the greater part of the stonework is pierced by many small holes which aid in giving texture and play of light and shadow. The scale of the building is pleasing, as it is more human and far less grand and impressive than much French and Italian work, and yet sufficiently ample to be generous and dignified. The persistence of the name "Hotel de Sevigne" is probably due to the fact that Mme. de Sevigne occupied the building as a tenant in 1677.



THE MATERIAL IS
LIMESTONE

ELEVATION
Scale ¼" = 1'-0"

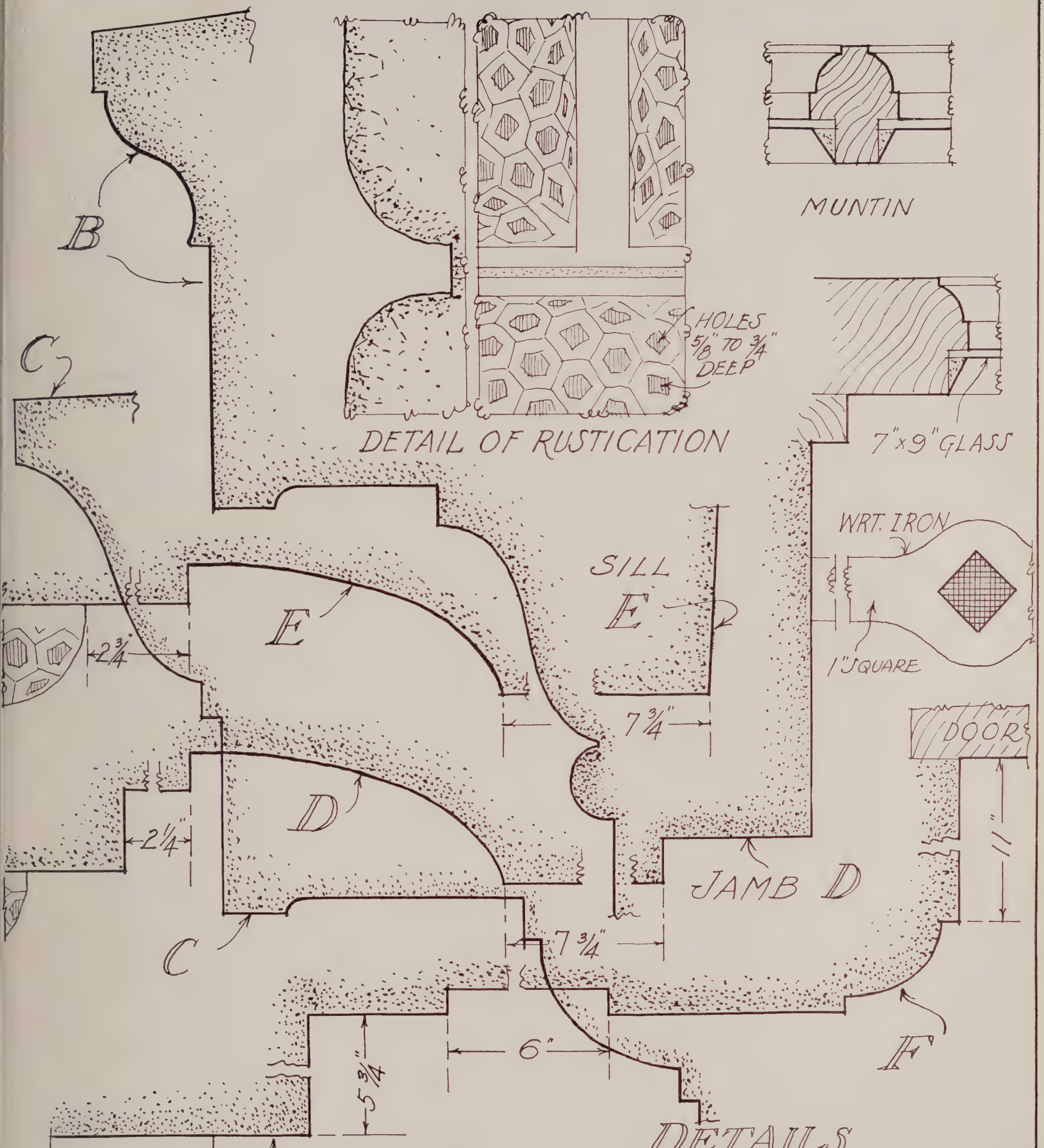


PLAN (THROUGH "AA")
scale ¼" = 1'-0"

FRENCH
DETAILS
1923

CENTRAL MOTIF
MUSÉE CARNAVALET
ANCIEN HOTEL DE SEVIGNY
PARIS, FRANCE.

MEASURED AND
DRAWN BY
F. N. BREED



DETAILS
ONE HALF FULL SIZE

FRENCH
DETAILS
1923

CENTRAL MOTIF
MUSÉE CARNAVALET
ANCIEN HOTEL DE SEVIGNY
PARIS, FRANCE.

MEASURED AND
DRAWN BY
F. N. BREED.

Plate Description

HOUSE OF J. S. PHIPPS, ESQ., PALM BEACH, FLA. Plates 49–53. For this beautiful structure the architect, Addison Mizner, has used sandstone of a rich yellow which adds particular interest to a building designed in a restrained and highly refined version of the Spanish renaissance. The low pitched roofs, placed upon several slightly different levels, and the floors of loggias and even of certain rooms are of handmade tile produced in Florida, both the glazed and the unglazed ranging from pink, through different shades of brown, to black. The house is furnished with tapestries and other carefully selected Spanish and Italian antiques which have been arranged under the architect's direction.

TWO HOUSES AT LOCUST VALLEY, N. Y. Plates 54–57. For these buildings, designed in what is often called the "modern English" style, the architects, Goodwin, Bullard & Woolsey, have used a combination of brick and stucco. Brick is used for building the walls up to the window sills of the lower floors and also about the jambs, and for the chimneys, and the roofs are of slate laid with random weatherings. The stucco has been permitted to retain its natural color, and the exterior woodwork has been stained weathered oak. The interior woodwork and plaster walls are painted, and the floors throughout are of wood which has been stained and waxed. Heating is supplied by steam, a modulation system being used. Landscaping of the grounds of both houses has been done under the direction of the architects, and is of a naturalistic character, and the planting is of a simple nature.

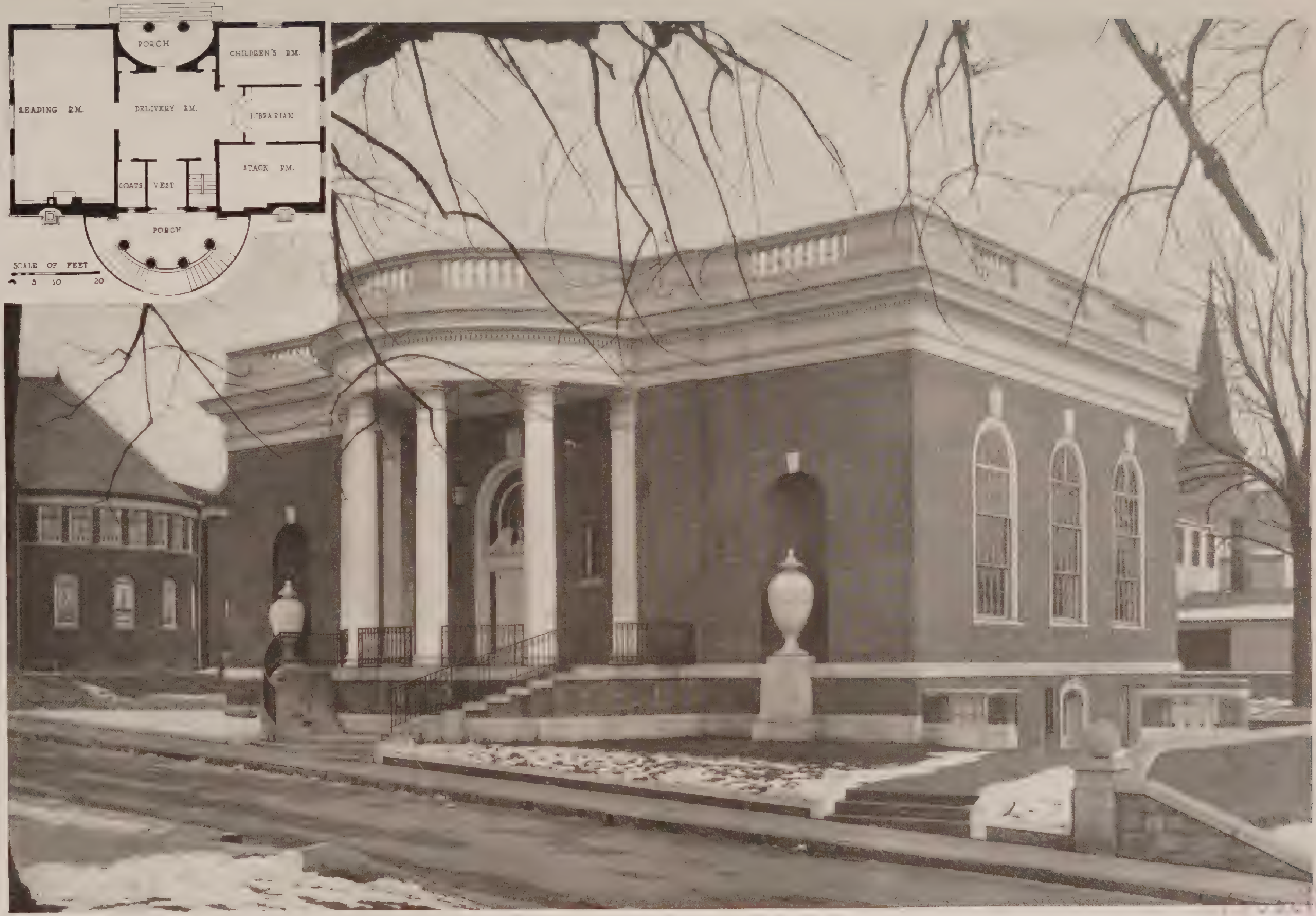
CHARLOTTESVILLE LIBRARY, CHARLOTTESVILLE, VA. Plates 58–60. Considerable responsibility is assumed by an architect who undertakes the designing of an important structure for a town which is already rich in architecture and historical associations, and Charlottesville contains many excellent examples of architecture in addition to being dominated by the University of Virginia and the historic buildings designed by Thomas Jefferson, and restored and amplified, following a disastrous fire, by McKim, Mead & White. With these beautiful structures the Charlottesville Library, designed by Walter D. Blair, is in accord, and is placed upon a corner plot, the differences in grade which the site involves being cared for by retaining walls of the brick and marble of which the library itself is built. The monolithic columns at the semi-circular portico, the steps, string courses, balusters and keystones are of marble, while the cornice which is of wood has been detailed to the scale of stone. Railings about the portico are of iron painted black, and the roof of the building is of tar and gravel.

Walls and woodwork throughout have been painted in colors which agree with the character of the structure; floors are of cork with borders and bases of black and gold marble, excepting in the entrance hall where the floor is entirely of marble. The stackroom is arranged for the accommodation of about 20,000 volumes. Heating is by vapor equipment, and the cost of the building, excluding lighting fixtures and furnishings, was 51½ cents per cubic foot in July, 1919, when the contract was let. It was desired, in fitting up the library, to avoid the cold institutional appearance possessed by most public libraries, and considerable color has been introduced in chair coverings of tapestry, linen or damask, and in lampshades, while added interest is given by many gifts of furniture and objects of art.

PUBLIC LIBRARY, KENNEBUNK, ME. Plate 61. An interesting example is here given of a library building intended to serve the needs of a growing New England town. In the selection of an architectural type, the architects, Hutchins & French, have made use of a form which is historically identified with all New England, and which lends itself well for use in a building which by its very nature seems to demand a treatment which is somewhat formal and balanced as to design and plan, and which, moreover, can be well worked out in materials which are not of prohibitive cost.

The foundations, up to the ground level, are of concrete, while the walls are of waterstruck brick laid in Flemish bond. The horizontal courses in the walls, the lintels at the windows, and the blocks used at certain places to complete the necessary balance of design are of stone, but the columns which support the entrance portico, the trim about the main doorway and the Palladian windows, and the cornice which extends around the building are of wood painted white. The roofs are covered with slate. Walls of the reading room are paneled in oak; the trim of the delivery room is painted, and the floors throughout are of oak. The stackroom is fitted with wooden shelves, and heat is provided by hot water equipment. The contract was let in 1906, and the cost per cubic foot was 30 cents.

THETA DELTA CHI FRATERNITY HOUSE, AMHERST, MASS. Plates 62–64. The home of Theta Delta Chi is one of the more recent of quite a number of fraternity houses which the architects, Putnam & Cox, have built at Amherst College, structures which by reason of their number, their size, their excellent architecture, and their being placed near the campus add considerably to the interest of a college town. For this building the architects have employed used brick which possesses character while costing about half of what would have been paid for new brick. The very simple exterior trim is of wood painted white, and shutters are painted green; foundations are of concrete, and the roofs are covered with slate. Use has been made of wood studding and metal lathing; the floors are of mill construction; heating is by steam, and for the trim of the interior fir and pine have been employed. The cost of the structure was 60 cents per cubic foot in November, 1920, when the contract was placed.



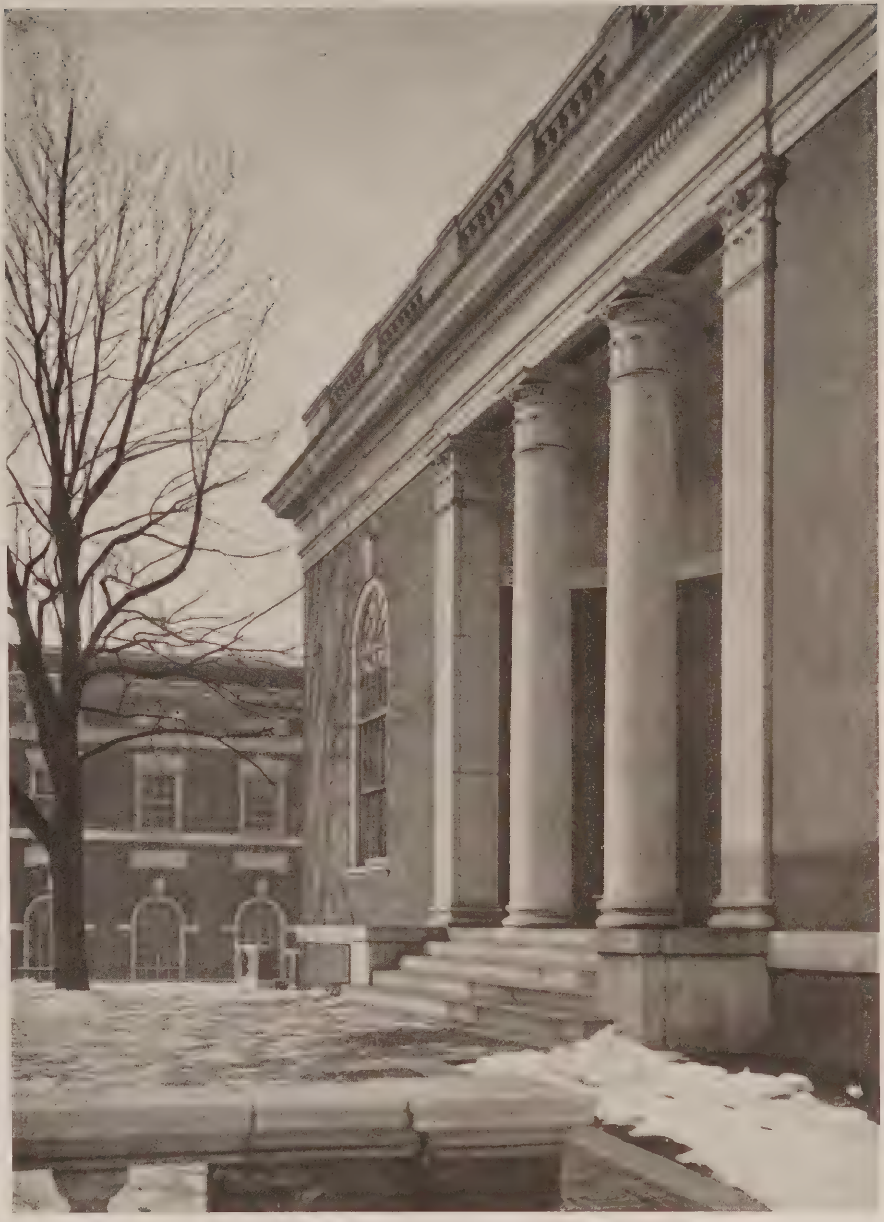
Photos by Tebbs Architectural Photographic Co.

GENERAL EXTERIOR AND FLOOR PLAN

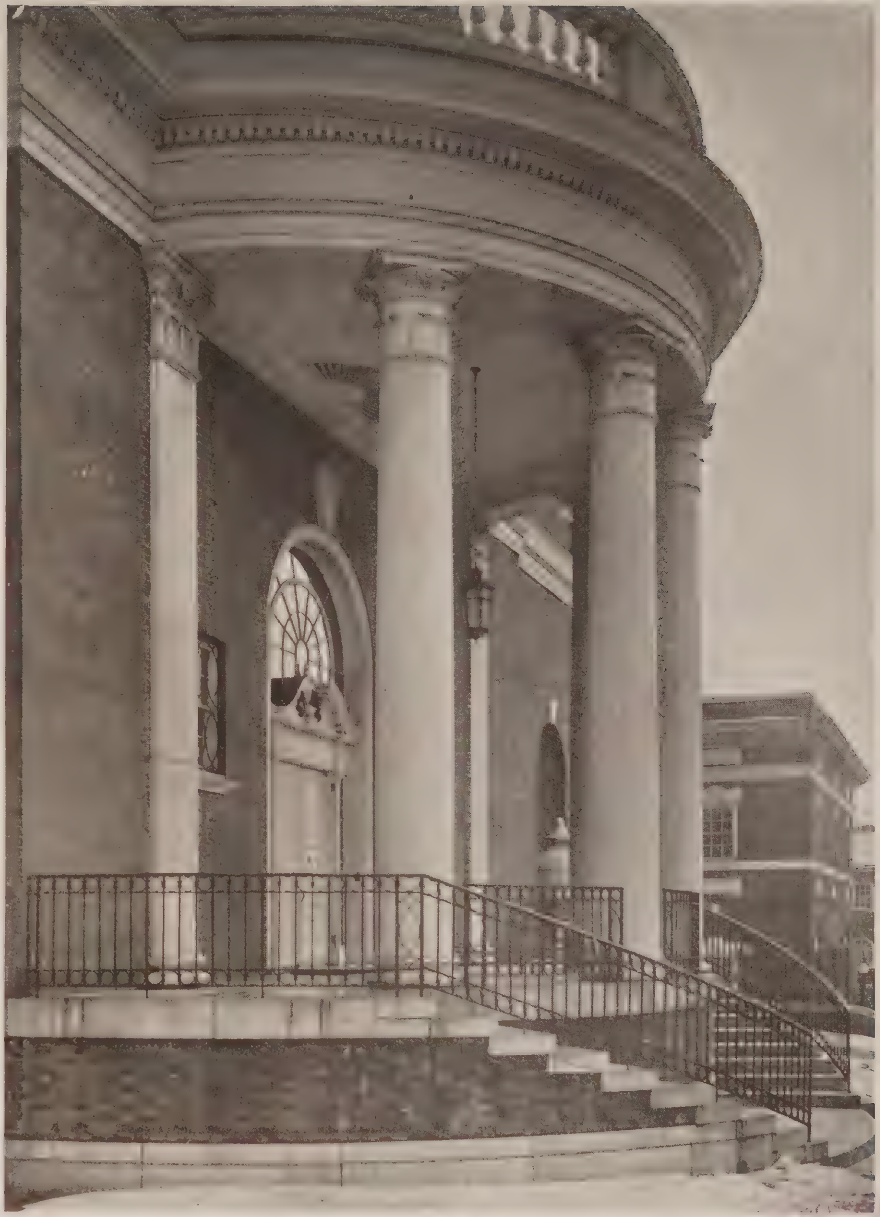
CHARLOTTESVILLE LIBRARY, CHARLOTTESVILLE, VA.

WALTER D BLAIR, ARCHITECT

LIBRARY



DETAIL OF REAR LOGGIA

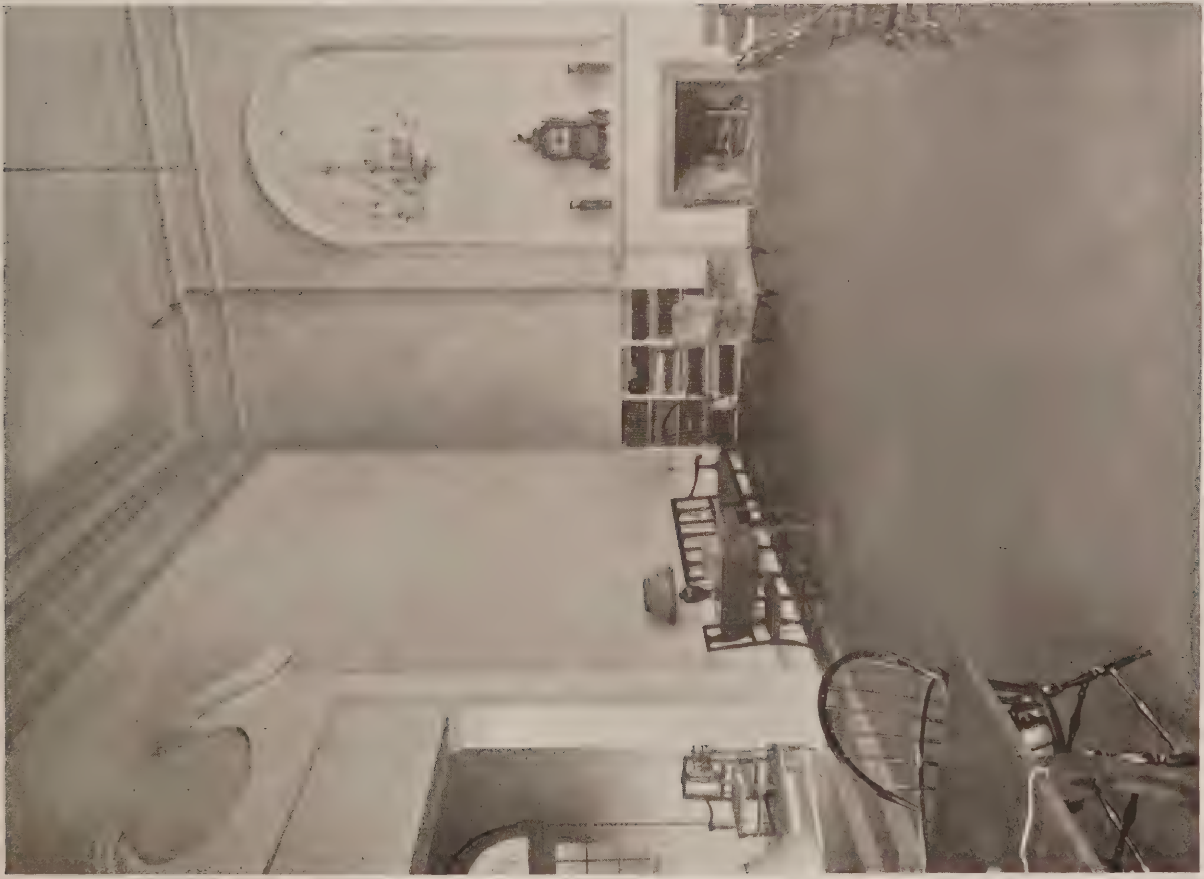


DETAIL OF FRONT PORTICO

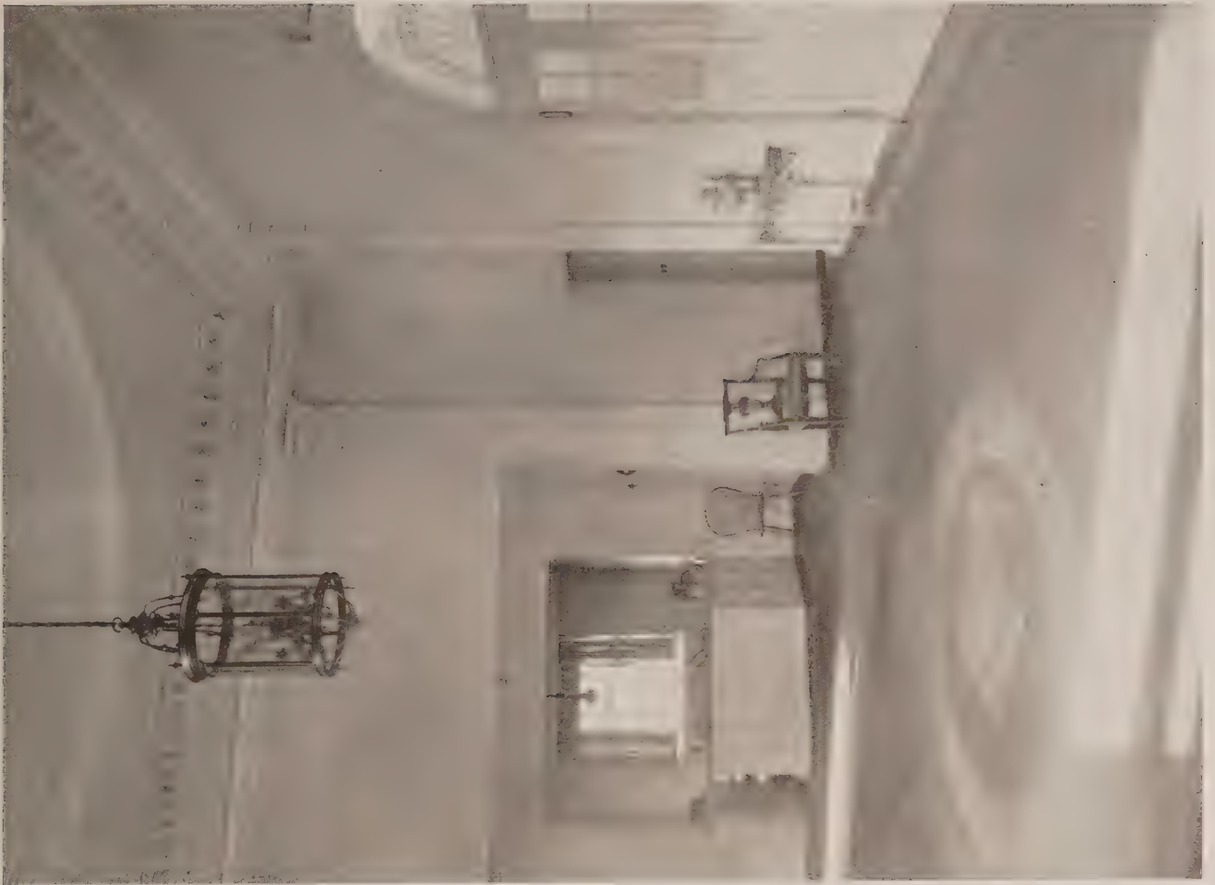
CHARLOTTESVILLE LIBRARY, CHARLOTTESVILLE, VA.

WALTER D BLAIR, ARCHITECT

PUBLIC LIBRARY



READING ROOM



DELIVERY ROOM

CHARLOTTESVILLE LIBRARY, CHARLOTTESVILLE, VA.

WALTER D BLAIR, ARCHITECT

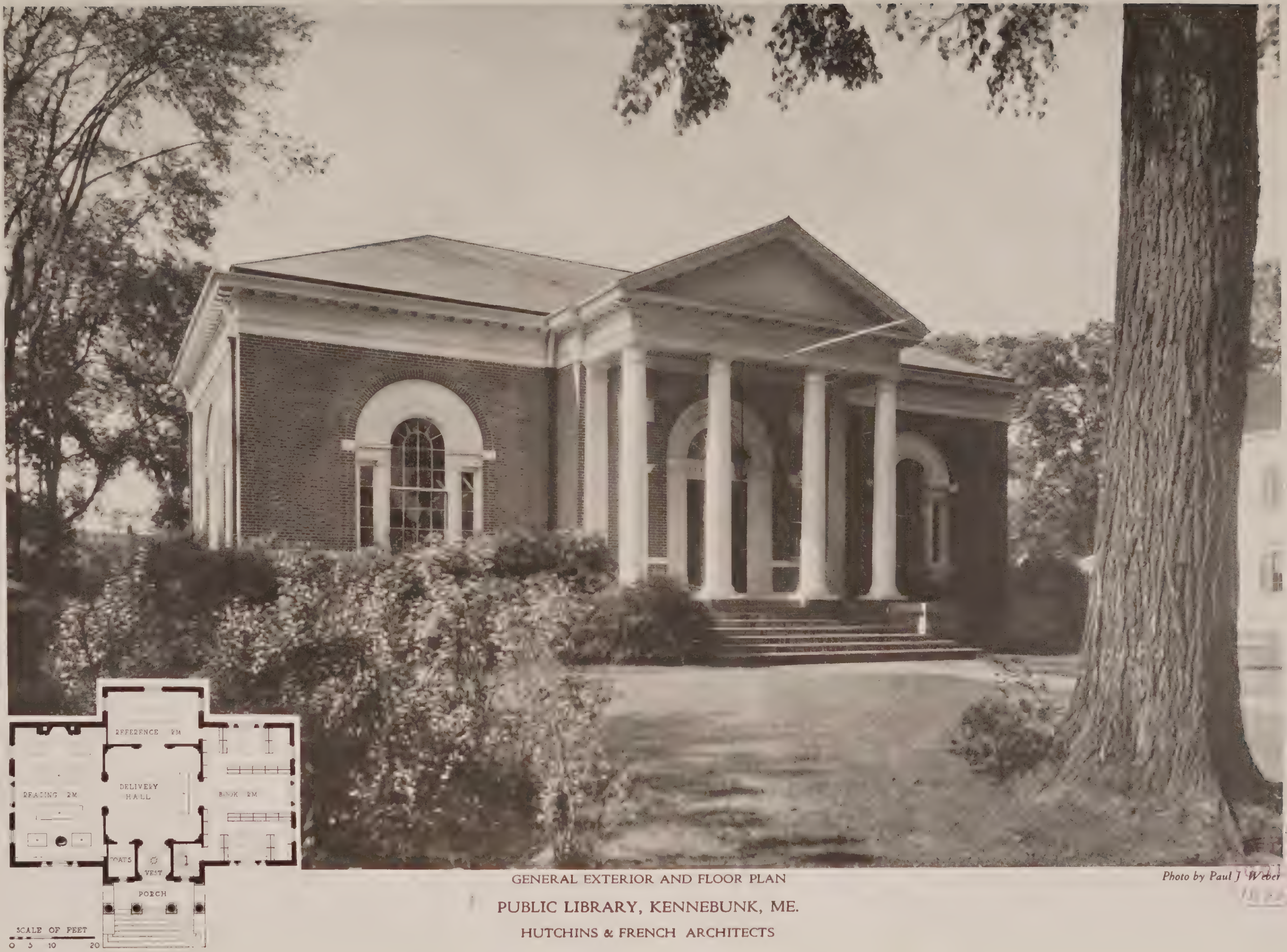
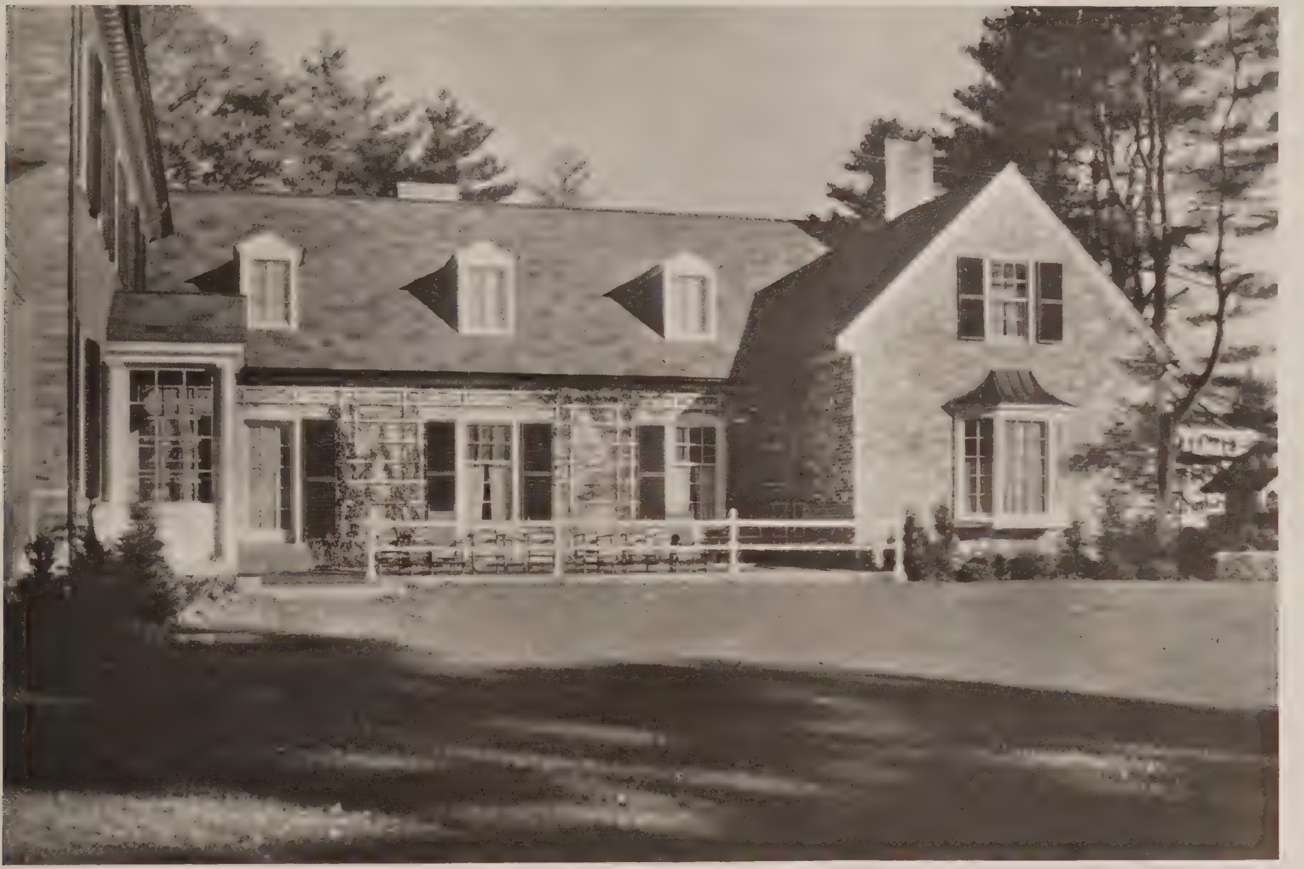


Photo by Paul J. Weber

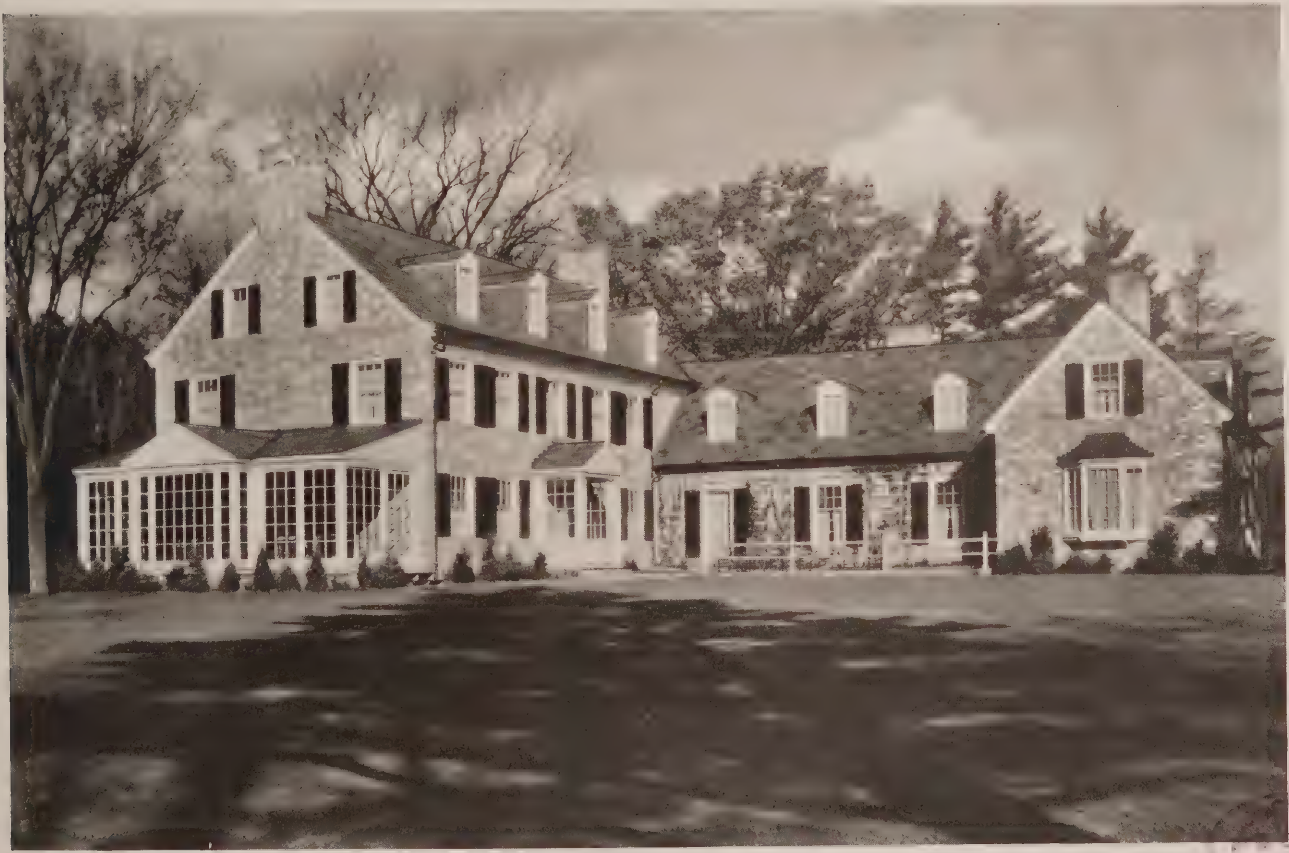
GENERAL EXTERIOR AND FLOOR PLAN

PUBLIC LIBRARY, KENNEBUNK, ME.

HUTCHINS & FRENCH ARCHITECTS



EXTERIOR OF LIVING ROOM WING

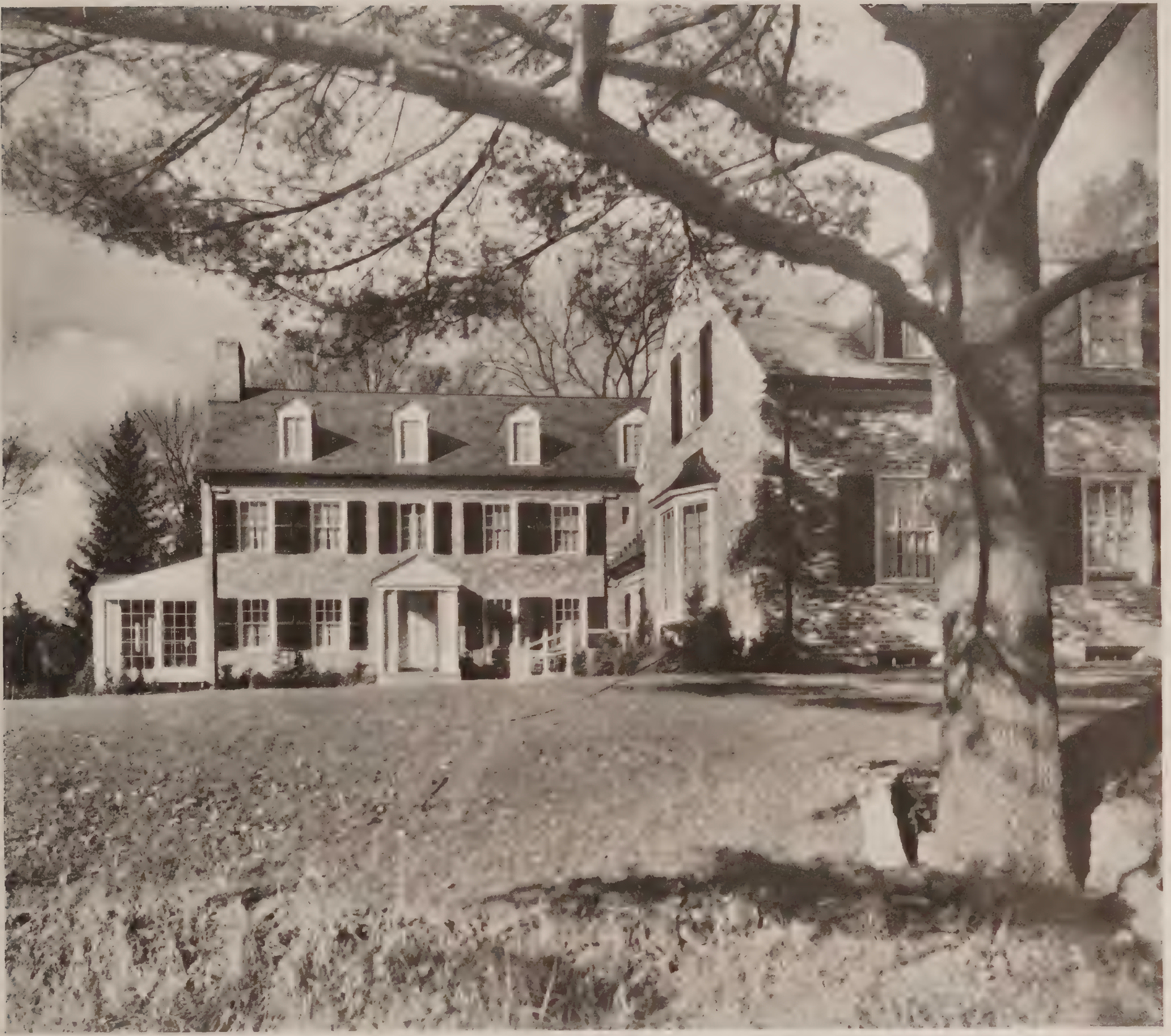


Photos by Paul J. Weber

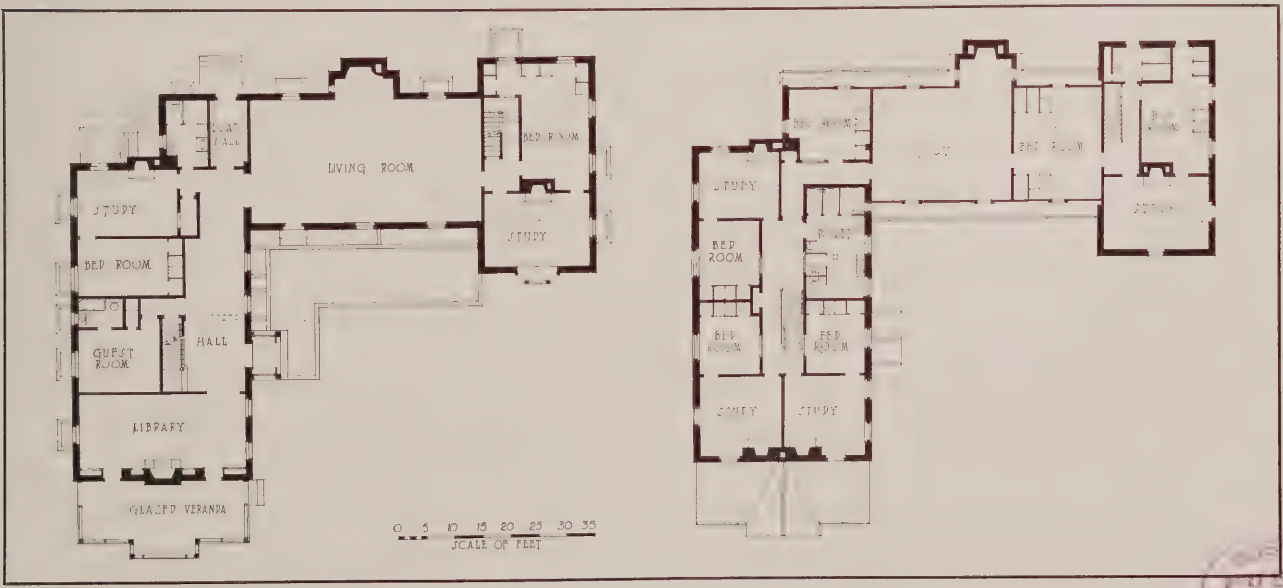
GENERAL EXTERIOR VIEW

THETA DELTA CHI FRATERNITY HOUSE, AMHERST COLLEGE, AMHERST, MASS.

PUTNAM & COX, ARCHITECTS



GENERAL VIEW FROM THE STREET

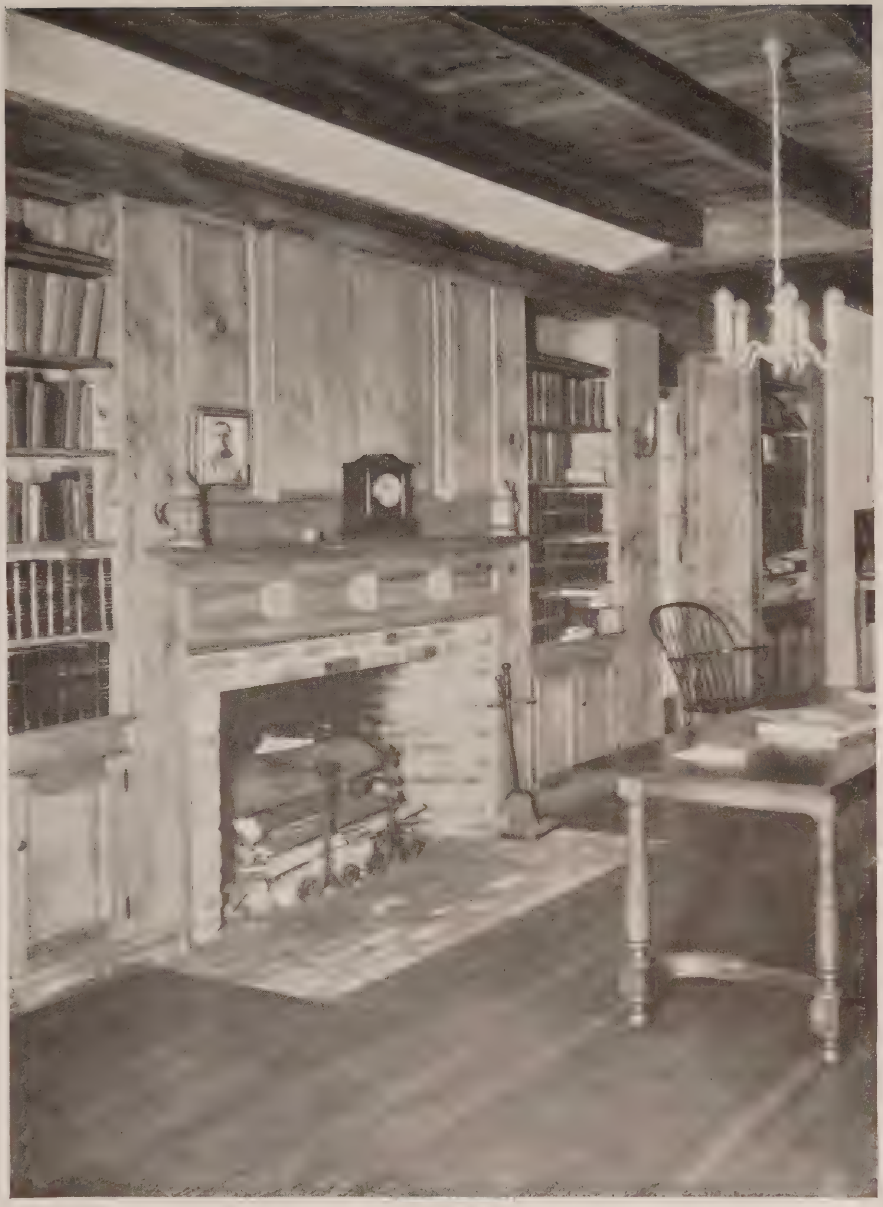


FIRST FLOOR PLAN SECOND FLOOR PLAN

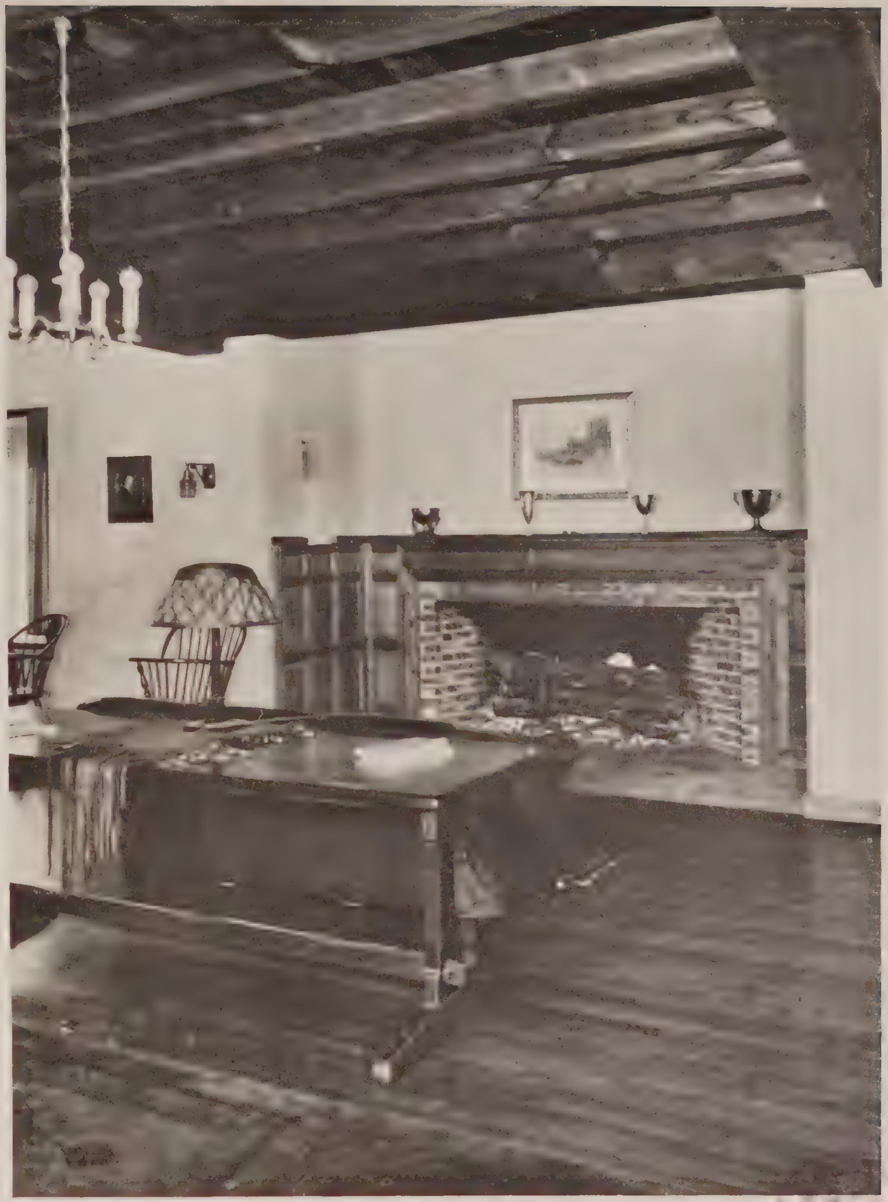
THETA DELTA CHI FRATERNITY HOUSE, AMHERST COLLEGE, AMHERST, MASS.

PUTNAM & COX, ARCHITECTS

BOSTON PUBLIC LIBRARY



LIBRARY FIREPLACE



LIVING ROOM FIREPLACE

THETA DELTA CHI FRATERNITY HOUSE, AMHERST COLLEGE, AMHERST, MASS

PUTNAM & COX, ARCHITECTS

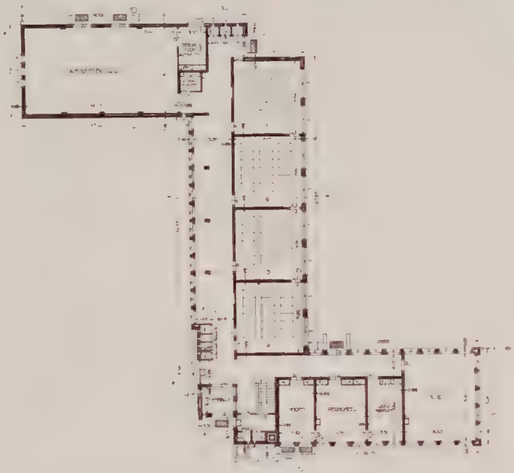
Some Buildings in a Dutch Housing Community

W. M. DUDOK, *Architect*

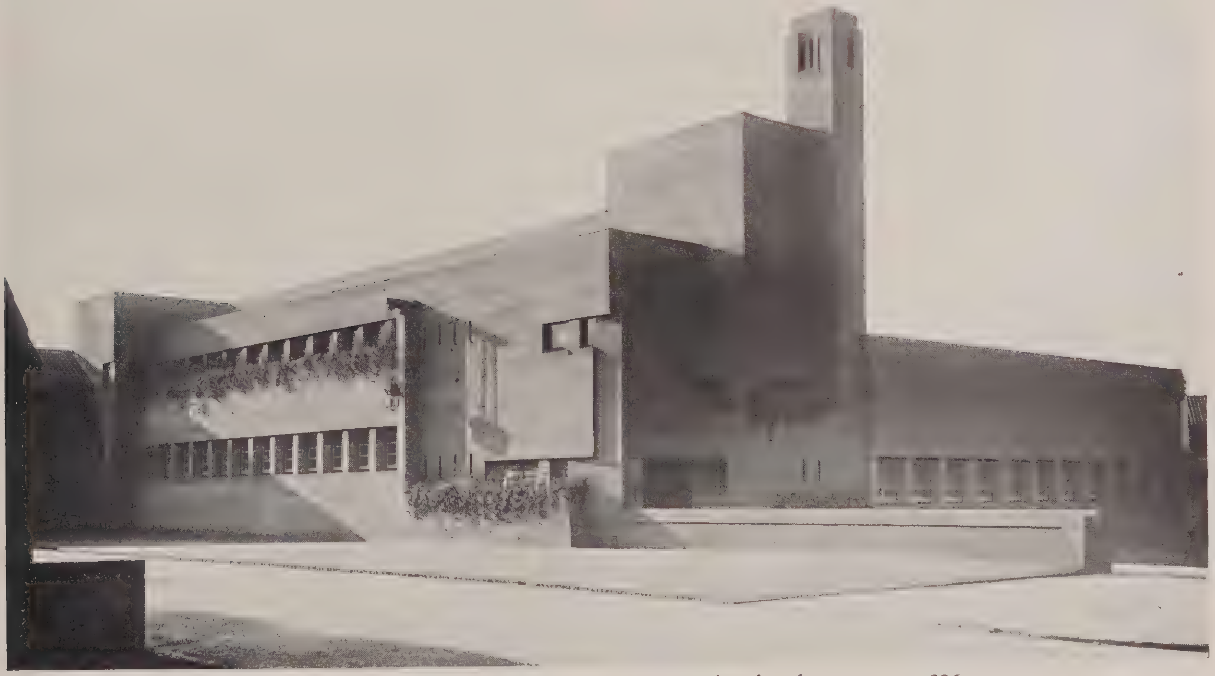
DOMESTIC architecture offers an opportunity for an expression of character more definite than is possible in buildings of most other types; for that reason it is valuable as illustrating the tendencies of modern building as it is being developed in different countries, and in THE FORUM for April there were contained illustrations of a number of Dutch villages of an industrial nature, developed under direction of government agencies or co-operative housing associations, which suggest certain of the tendencies which are guiding architectural development in Holland.

Building in any country is likely to take a form directed partly by tradition and partly by present-day conditions and limitations, which generally means limitations as to cost. Holland has always boasted a strongly marked type of architecture, particularly in its domestic phases, and these illustrations of Dutch villages showed adherence to the spirit of Dutch tradition while considerable departure is noted as to the letter. Thus we have the lowness and friendly intimacy of the old Dutch houses, set at different distances from the street and often with tiny gardens about the doorways; the buildings themselves preserve the traditional grouping of doors and windows, but the character of the brickwork is different,—good as the modern work is,—and steeply pitched roofs (one of the chief characteristics of the older Dutch cities) when used at all must justify themselves by affording sufficiently increased living space within. Gone are the days, even in Holland, when high pitched roofs and "stepped" gables could be used without thought of their utility and purely for the sheer beauty and interest which they brought!

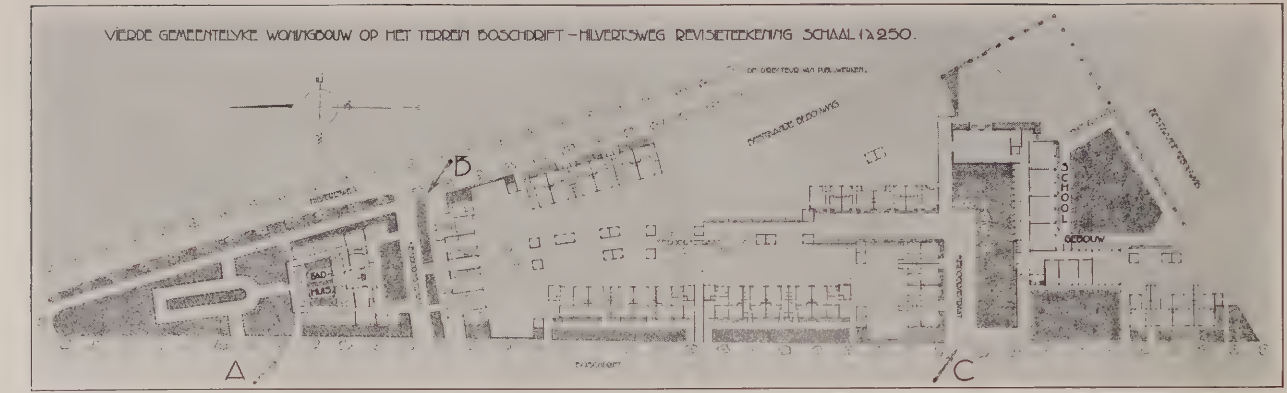
Equally expressive of this change in the character of Dutch building are the structures, two schools and a bathhouse, illustrated here, —buildings which because of their sizes and their functions aid in studying this development. Hilversum, where they are built, is a suburb of Amsterdam, largely occupied by workers in industrial plants, and the city has carried out an extensive building program, of



First Floor Plan of School Shown Below
The second floor has four class rooms in the middle section



Exterior view of primary school from point (C) on plot plan shown on page 236
School in Community Group at Hilversum, Holland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BESTAANDE BEBOUWING
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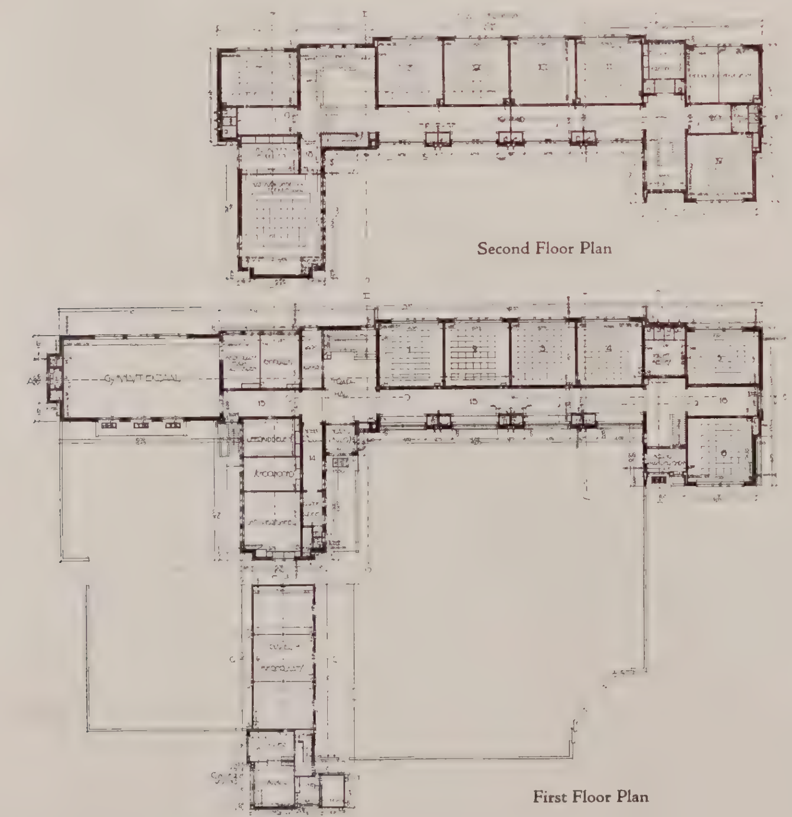
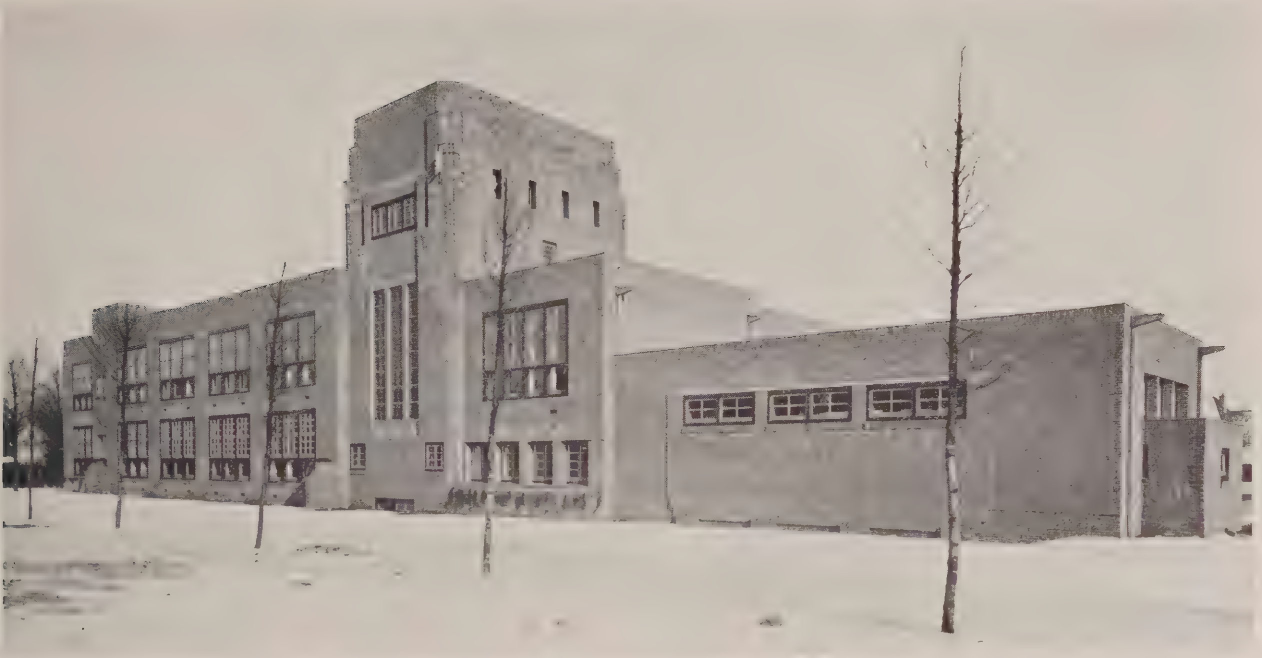
Plot Plan of Small Housing and Educational Community at Hilversum, Holland

which the bathhouse and the schools constitute an important part. The illustrations of the buildings themselves suggest many of the characteristics of modern Dutch building. Travelers in Holland sometimes think that present-day Dutch building occupies, in a sense, a position midway between that of Germany and that of England, by both of which it is strongly influenced. Dutch architecture lacks the brutality, brusqueness and intense modernism which one so often sees in Germany—building of an extreme and often uncouth radicalism, the last word in architectural vagary, which may be superficially pleasing for a time by reason of its novelty, but which palls upon more extended acquaintance. This does not mean that Dutch architecture has not been somewhat contaminated by German influence, and as was suggested in THE FORUM for April, the extreme modernists "seem to be straining to make brick and mortar do things for which they are unfit,—to make them curve, billow and cascade,—as if it weren't bad enough to run after street cars oneself without going home at night to a house which appears to be doing the same thing!" Most Dutch work is of a more restrained character, but the Dutch have not yet caught quite the spirit of simplicity and dignity which fills so much of the recent English work, even of the work done under stress of the war and post war periods.

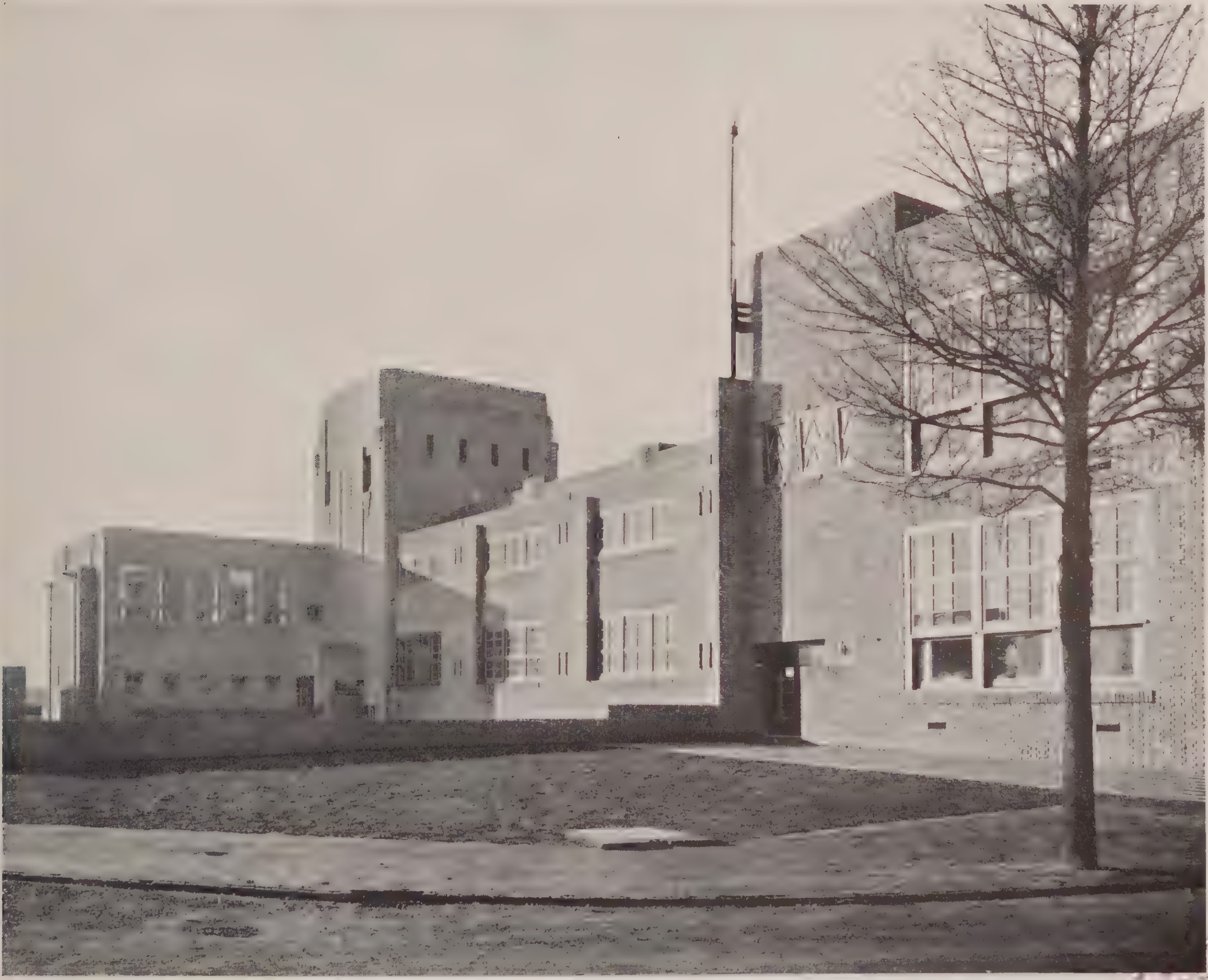
Thoroughly typical of the best modern Dutch work are these buildings by W. M. Dudok, a Dutch architect of well known modernistic tendencies. While entirely modern and frankly an expression of present-day conditions, the structures are thoroughly and essentially Dutch and could hardly be mistaken as belonging to any other country. In Mr. Dudok's opinion "architecture is the art of proportion, proportion in building masses, in the same way as music is the art of proportion of sounds, melodies." He tries "to build in a simple and clear way, making use of the natural means of architecture, to get harmony in the contrasted working of the masses." Mr. Dudok has clothed the buildings with definite expression. At first sight it might seem that in the omission of the pitched roofs there has been an abrupt breaking with Dutch tradition, but a moment's study will show that there have been obtained certain advantages which largely compensate for the loss of the roofs which necessity for economy probably denied. Here the architect has obtained excellent grouping or massing with a certain symmetry or balance, and the result is unity of structure—structure expressed in building. Much of the charm which study of the buildings develops is due to graceful and subtly handled outlines, for the brick walls in several instances recede slightly as they ascend and their thicknesses become less; corners are softened in various ways, one of which is the use of a kind of dentil treatment secured by



Plans of Combination Intermediate and Commercial School, Hilversum, Holland



VIEW OF REAR SHOWING GYMNASIUM WING AT RIGHT

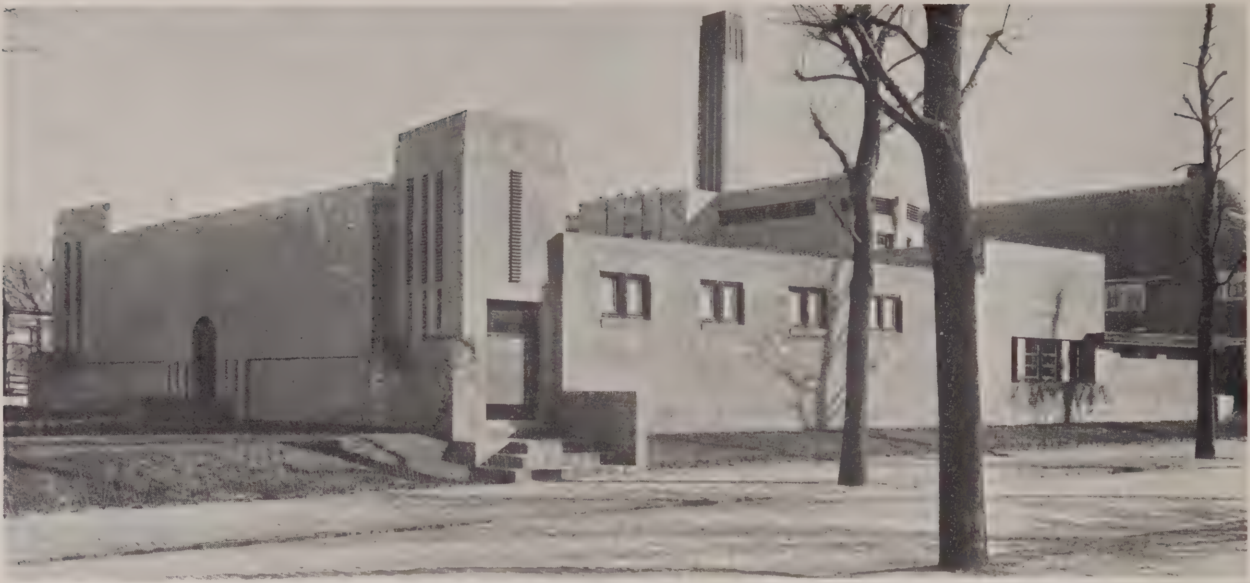


VIEW LOOKING INTO FORECOURT SHOWING STAIRHALL TOWER

INTERMEDIATE AND COMMERCIAL SCHOOL, HILVERSUM, HOLLAND

W. M. DUDOK, ARCHITECT

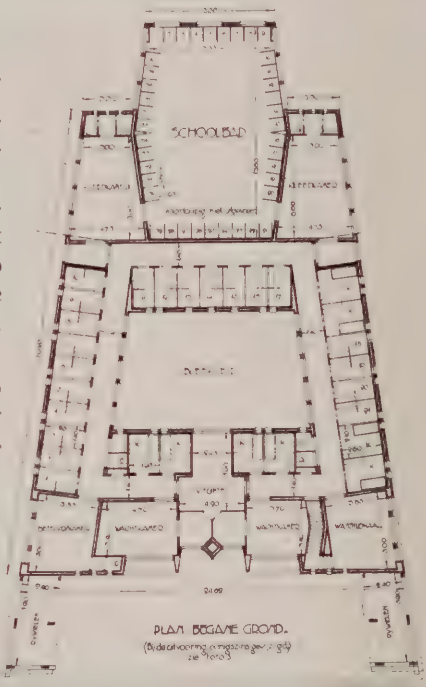
PUBLIC LIBRARY

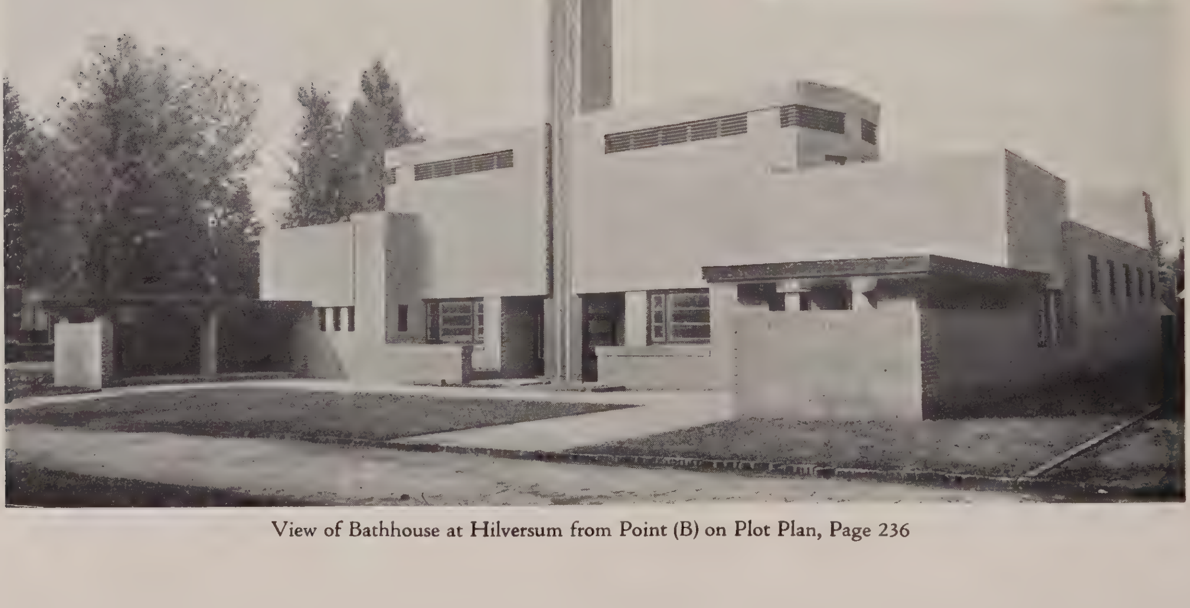


Hilversum Bathhouse from Point (A) on Plot Plan, Page 236. Floor Plan of Completed Building Below

omitting a half brick from each alternate face of the two walls, and use is made at certain corners of small oblique faces cut from brick. Another strikingly effective treatment is that upon the front face of the tall brick chimney of the bathhouse, and the use of what resembles chaneling as the top of the chimney is reached. The softening of outlines is not wholly upon vertical lines, for in these structures, as in many other modern Dutch buildings, use is made of copings and parapets of brick laid on edge, and string courses of brick so laid relieve the monotony of certain walls, or bind into a group certain unrelated windows. The unit in all these buildings is the brick, and ornament as well as structure is secured by different methods of handling the basic unit itself.

These Dutch buildings have grown, as all true architecture must, out of the lives of the people. Good architecture of any age is the result of continuity of tradition modified by the absorption of new life.





View of Bathhouse at Hilversum from Point (B) on Plot Plan, Page 236

ENGINEERING DEPARTMENT

Charles A. Whittemore, *Associate Editor*

Fuel Oil

By CHARLES A. WHITTEMORE

DEVELOPMENTS of the past heating season have set the average householder or building manager thinking of a substitute for coal, either bituminous or anthracite.

There is no doubt but that fuel oil to a certain degree can solve the problem satisfactorily in many cases. Also there is no doubt but that a number of people are so thoroughly uninformed on the matter of oil installation that they buy it with some hesitancy. It is a fact, however, that fuel oil can be used equally well in the home and in the large office building with perfect safety. This is evidenced by the fact that the underwriters have hedged the installation about with but few restrictions, and that the state authorities are very lenient in their requirements. This does not in the least degree mean that an installation can be made in a slipshod manner, but it does mean that for the work involved, for the fire hazard attendant upon such an installation, the requirements of either the underwriters or the state authorities are no more rigid than they should be to give perfect safety.

Roughly, there are three general varieties of oil-burning apparatus: (1) gravity feed, (2) the force blower system, and (3) a combination of these two, with a centrifugal burner. In a previous article* the merits from the scientific standpoint of fuel burning and coal were discussed, so that there is no particular need of entering into the engineering phase of it at this point. It may be well, however, to call attention to one or two fundamental facts.

The number of B.t.u. in fuel oil, as compared with the B.t.u. in coal, bulk for bulk or volume for volume, is decidedly in favor of the fuel oil, so that to store up the same number of latent heating units requires a much smaller space for oil than for coal. The storing of the oil, however, is not the only consideration. Fuel oil is a composition of gases and oils which under certain temperatures and climatic conditions will readily give off inflammable gases which, if confined, are explosive. Some provision must therefore be made for taking care of these gases so that there may be no bad effects from the noxious fumes, and the possibility of explosion and other damage be reduced to the minimum. Coal on the other hand is theoretically passive and inert, and only in very rare cases is spontaneous combustion known in anthracite coal bins.

Where soft coal must be used, as has been so frequently done during this past heating season, it is imperative that an opportunity be given to ventilate the soft coal bins, as spontaneous combustion in bituminous coal is a more or less common occurrence and presents a serious condition to be met if a fire starts. Bituminous coal has been known to burn or smoulder for long periods without actual flame, fire or incandescent particles appearing on the surface. If, however, ventilation space be allowed, the gases from the bituminous coal will pass off so that the possibility of spontaneous combustion is very much minimized.

In considering fuel oil there are, therefore, a variety of things which the architect or engineer must have in mind in order to make the installation practical and as nearly ideal as possible. It must be decided, first of all, whether the tank is to be an interior or exterior tank, and also a decision must be made as to whether or not the gravity feed or the force feed system is to be adopted. Some of the large buildings heated by fuel oil have their tanks inside the building, in sub-basements which are not used for other purposes. Other buildings have the fuel tanks located underground but outside the limits of the main walls of the buildings. Such installations have a certain advantage in that all danger from serious defects, which, by the way, is very much over-emphasized, is maintained outside of the limit lines of the building. It is desirable, however, to have the tanks arranged, whether on the interior or exterior, so that they may be examined periodically to determine their condition.

There are in general two types of fuel oil containers:—one, the iron or steel tank, the other, that of concrete. With each of these types there are individual problems involved which require some study. The iron tank should be built to withstand considerable pressure; *i.e.*, the joints should be tested to a safe degree beyond the normal pressure developed by the weight of oil and the possible pressure due to the gas development, provided the vent line is stopped up. It is frequently recommended, therefore, that the pressure to be guarded against should be not less than 500 pounds per square inch. The iron tank should be set in such a way that the feed pipe is readily accessible from the outside so that the shut-off valve to the feed pipe may be controlled from the inside, and so that the supply line valves may be easily reached. It is also extremely desirable that a special or extra valve be located on the exterior of the building at some convenient point, properly safeguarded against malicious tampering, and so arranged that in case of an emergency it can easily shut off the entire supply.

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*January, 1923

It is also necessary that a vent pipe be arranged either in the building construction or carried up in a slot on the outside of the wall to a point located some distance from the ground and with a return bend header with a fine mesh screen so that all of the gases may pass off without difficulty.

The tendency at the present time is to locate the fuel oil storage tank outside the building, below ground and below the frost line. In the majority of cases where the heating system carries a low steam pressure, it is possible to use steam coils in the oil storage tank; therefore this method is used to keep the fuel relatively warm. When the tank is located inside the building on the basement floor, it will be necessary to insulate the tank with concrete walls at least 8 inches thick with 6 inches of sand between the wall and the storage tank and with 12 inches of sand on top. The manner of insulation varies in different localities, and it is advisable to communicate with the insurance broker who is handling the property and obtain from him a set of regulations by which the insurance policy covering the building is written. In locating the storage tank inside the building and below the basement floor, it is necessary that the top side of the fuel oil storage tank be at least 2 feet below the finished basement floor, the basement slab immediately above the storage tank to be at least 9 inches in thickness.

At the present time the storage of fuel oil is becoming a problem for architects, and with the present coal strikes and labor difficulties owners of many buildings and residences are turning to the use of oil as a fuel. In times past there was a hesitancy to turn to use of oil, but as the true conditions of the potential resources of this fuel have become known, the architect is recommending its use without reservation in localities where it can be obtained at a price that will compete with coal.

There are, of course, many details involved in the laying out of an oil burning system, one of the most important being the storage, which will be discussed in this article. As already said, the heat content of oil is greater than that of coal, and less storage space is required, the ratio being about 2 : 3, so that the space for storage of oil will be two-thirds that required to store an equal amount of coal. This makes possible the storage of oil in locations where it would be impossible to store coal.

In practice, reinforced concrete storage tanks have been placed inside of buildings that have already been constructed, as in many cases the basements are so located that it would be impossible to construct a tank of steel, due to the difficulty in getting the material into the basement, or to noise from such a manner of construction.

The concrete oil tank is the only type of tank which should be permitted inside the building. Concrete in itself is not oil-proof. Therefore, in order to prevent the gradual seepage of the contents through the walls of the container the concrete itself must be made oil-proof, or a wrought iron or steel shell provided, around which the concrete shell may be built. Cast iron, on account of its lack of ductility, should never be used in construction of tanks.

Where steel tanks are desired, and it is possible to bring the plates into the basement where the tank is to be constructed, the construction employed is usually that of electric welding. When the storage tank is to be located outside the building and the soil is of such a nature as not to cause any deteriorating effect, a steel tank is generally used. This tank is constructed at the works and shipped directly to the building and set in place. The exterior surfaces of steel tanks should be treated with at least two coats of asphaltum paint. Reports from insurance companies which have investigated steel tanks show that they last from 20 to 30 years, and of course much longer where conditions are ideal.

The designing of fuel oil storage tanks is relatively simple. When the storage tanks are located inside the building, the 1 foot of sand fill on top or the weight of earth above the tank when it is located outside the building and below ground should be taken into consideration.

If the tank is located outside, and below a driveway where an oil delivery truck would pass, the rolling load of this delivery truck should be taken into account. The average truck load of oil weighs approximately 12 tons, the load being distributed 8 tons to the rear wheels and 4 tons to the front wheels. On inside storage, the live load is taken care of to suit the conditions. In buildings where the storage tank is more than 10 feet below grade, the hydrostatic head of oil in the fill pipe should be taken into consideration. This sometimes is greater than the live and dead loads combined.

The pipe through which the tank is filled is usually 8 inches for large building installations and from 2 to 3 inches for tanks of not over 800-gallon capacity. The suction line, which is directly connected with the pump, will vary from 1½ to 3 inches. For the escape of the gases and air in the filling of the storage tank there should be at least a 2-inch vent which will be carried up to a point 12 feet above grade with a return bend as previously described. This vent may be brought to the roof or run inside the building to the required height, and then through the stonework, terminating in a bronze outlet. A return line 1¼ inches in diameter is carried back to the fuel oil storage tank from the main piping system to allow complete circulation of the oil at all times. The registration of the depth of the oil in the storage tank is taken care of by a measuring device which requires a connection of ¼ inch to 1 inch, depending upon the device to be used. A manhole is installed to allow access to the storage tank at any time, in event of clogging of the suction line or cleaning of the storage tank.

In many states where there is a department of fire prevention or a state fire marshal it is necessary to have the layout of the fuel oil burning system approved. It is, however, necessary in all localities where the building is insured by a stock or mutual insurance company to comply with the regulations as established by the National Board of Fire Underwriters, and to submit for their approval proposed layouts of the fuel oil burning system that is to be used. If these regulations are adhered to there will be no change in the rates of the insurance on the building in which the fuel oil burning system is to be installed. In the larger cities architects will find that it is not only necessary to satisfy the state and insurance authorities but also the local authorities.

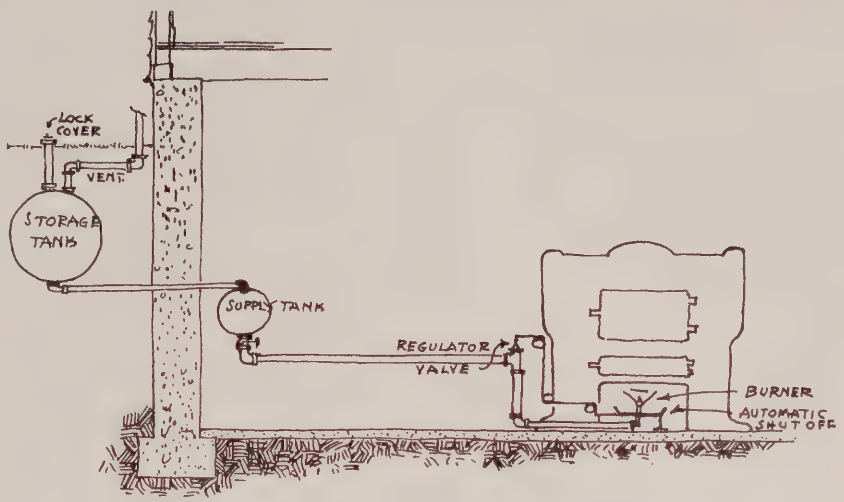


Fig. 2. Gravity Feed System

It is usually advisable to investigate the foundations for storage tanks which are to be located inside of buildings so as to prevent any possible chance, after the tanks have been constructed, of the foundations settling. For tanks located outside of a building, the architect should examine the soil conditions so as to prevent any unequal settlement of the storage tank, especially where the tank is constructed of concrete and waterproofed on the inside. This uneven settlement will of course set up stresses which will cause cracking of the waterproofing and leaking of the oil through the openings.

Fig. 1 shows a typical installation of a force feed system for residential work. In this case, as will be noted, the tank and the fill pipe are located outside of the foundation walls of the building, and the oil is conducted through to the pump or blower in a slot left in the basement floor. It should be remembered that in an installation of this kind the top of the tank should be at least 2 feet below the outside grade to insure satisfactory operation.

In connection with residential installations it is also desirable to consider the gravity feed type. In an installation of this kind, as shown by Fig. 2, the oil tank, containing not over 26 gallons, may be placed inside of the basement wall, but must be removed from the heater at least 10 feet. Unless an outside reservoir of larger capacity is installed it is obvious that the re-filling of a small unit of this type must be very frequent. The 26 gallons of oil contained would, in extreme weather, probably maintain an even temperature in the house for a period of not more than 48 hours. It is customary, therefore, when conditions are right for such an installation (that is, if the heater is located sufficiently below the grade), to have a large tank with an outside fill pipe so located that it will feed by gravity into a smaller tank inside of the building, this feed being controlled by proper valves. Installations of this type are very numerous, and in the majority of cases have given perfect satisfaction. It must be noted, in advising a client on an installation of this type, that temperature control can be applied to this installation as well as to the ordinary coal heating installation. It is necessary, however, in using temperature control with oil of the gravity-feed type, to install a separate bypass control valve, so that the pilot light will always be supplied with the requisite amount of oil in order to keep it burning, but so that the operation of the thermostat will open and close the main valve to such an extent as to permit of a vigorous fire when such is necessary. It should also be noted that with a gravity feed system of this type a pilot is not required.

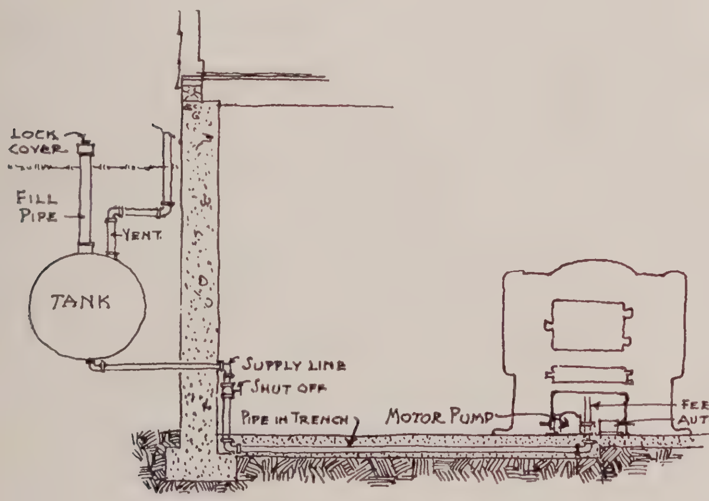


Fig. 1. Small Force Feed System

Fig. 3 shows a typical installation in a large building. In this the tank is located on the outside of the foundation walls,

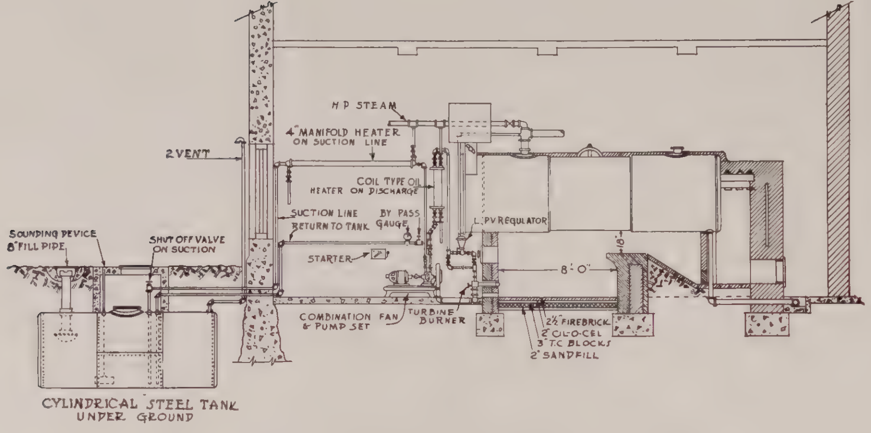


Fig. 4. Details of Boiler Room Arranged for Oil Burning

the pipe being carried directly to the pumps, and thence into the system. It should be borne in mind that the average large building installation requires a preliminary heater to heat the oil before it enters the burner, in order to secure greater efficiency. In certain instances the room in which the storage tank is placed is kept to a predetermined temperature. In some cases steam lines are run around the supply pipes as with certain types of instantaneous heaters, so that the oil is always kept in a flowing state.

In other installations, as in Fig. 3, the heater is placed in close proximity to the burners. The oil itself is rather viscous in its characteristics under normal temperature, but when raised to a temperature of say 100° it flows readily, and this condition must be provided at the burners in order to get the best results. Fig. 4 shows a boiler installation with an outside underground tank.

The storage tank in the basement of the building embodies the same general characteristics as that shown in Fig. 3 except that the space above the tank should be completely enclosed in the form of a vent chamber and a separate vent be run from this room and be independent of the vent from the tank itself. Also it will probably be necessary in the case of an installation of this kind to have extension valves which can be reached from the outside of oil room directly above tank.

Oil heating has without doubt come to stay, and within the course of a few years there will be improvements made over the present systems, which will minimize some of the present inconveniences, such as pre-heating oil, etc., and also minimizing the carbonizing effect of the oil combustion in the heating chambers.

In a previous article the subject of exhaustion of the world's oil supply was discussed at some length, but this need not concern the architect or engineer who is planning an installation at the present time.

The writer wishes to acknowledge the courtesy of Mr. P. W. Dillingham, through whom some of these illustrations and some of the data have been obtained.

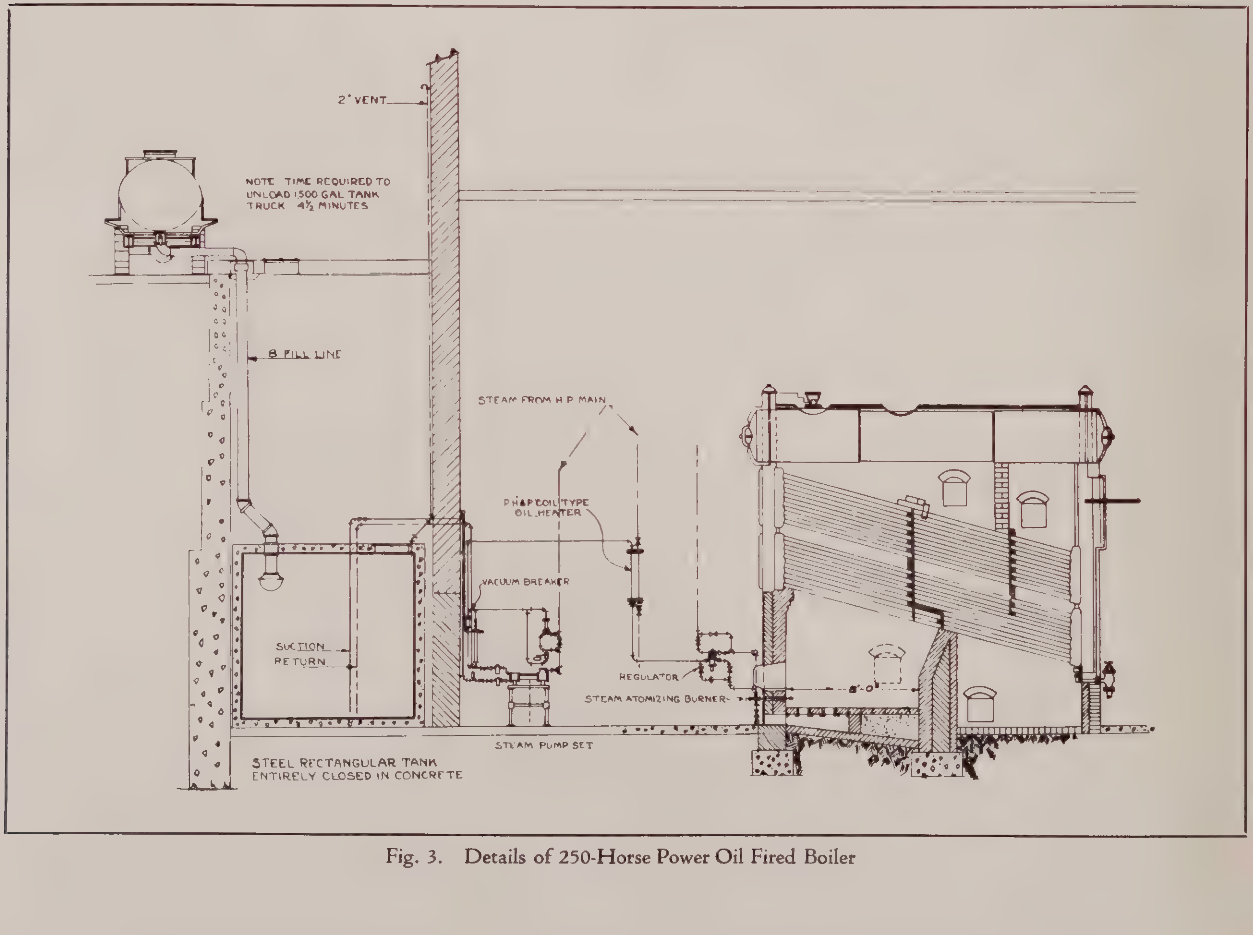

2" VENT
NOTE TIME REQUIRED TO UNLOAD 1500 GAL TANK TRUCK 4½ MINUTES
8 FILL LINE
STEAM FROM H P MAIN
P H&P COIL TYPE OIL HEATER
VACUUM BREAKER
SUCTION
RETURN
REGULATOR
STEAM ATOMIZING BURNER
8'-0"
STEAM PUMP SET
STEEL RECTANGULAR TANK ENTIRELY CLOSED IN CONCRETE

Fig. 3. Details of 250-Horse Power Oil Fired Boiler

The Use of Handbooks

PART II

By E. F. ROCKWOOD, *M. Am. Soc. C. E.*

IN the April number of THE ARCHITECTURAL FORUM some suggestions were given regarding the use by architects and engineers of the handbooks and "pocket companions" issued by certain large lumber associations or steel manufacturers, and to illustrate their usefulness analysis was made of a problem involved in designing the floor of a steel-framed hotel with columns 20 feet apart each way.

For the next problem, design the columns to carry this floor assuming a six-story building (including basement). The quickest way of figuring column loads is shown here. Each column will carry an area of 20 x 20 or 400 square feet. Then:

Location			*Total Load*
5–R	400 x (40+85)	50,000	
	Wt. of column and fireproofing	2,000	
		52,000	52,000
4–5	Load from column above	52,000	
	400 x 105 (dead load from this floor)	42,000	
	Wt. of column and fireproofing	2,000	
		96,000	
	400 x 50 (floor live load)	20,000	
		116,000	116,000
3–4	Load from column above excepting floor live loads	96,000	
	400 x 105 (dead load from this floor)	42,000	
	Wt. of column and fireproofing	2,500	
		140,500	
	400 x 50 x 2 x 0.75 (reduced floor live loads)	30,000	
		170,500	170,500
2–3	Load from column above excepting floor live loads	140,500	
	400 x 105 (dead load from this floor)	42,000	
	Wt. of column and fireproofing	2,500	
		185,000	
	400 x 50 x 3 x 0.60 (reduced floor live loads)	36,000	
		221,000	221,000
1–2	Load from column above excepting floor live loads	185,000	
	400 x 105 (dead load from this floor)	42,000	
	Wt. of column and fireproofing	3,000	
		230,000	
	400 x 50 x 4 x 0.50 (reduced floor live loads)	40,000	
		270,000	270,000
B–1	Load from column above excepting floor live loads	230,000	
	400 x 125 (dead load from this floor)	50,000	
	Wt. of column and fireproofing	3,000	
		283,000	
	400 x 50 x 4 x 0.45 400 x 100 x 1 x 0.45 (reduced floor live loads)	54,000	
		337,000	337,000

The roof live load is carried down with the dead loads, as it should never be reduced. The dead loads are made up by adding to the weight of the floor construction, as taken from the tables, the weight of the roofing, plastering, screed fill, wood flooring, and beams and their fireproofing. Assume next that all stories are 9 feet from top of girder below to bottom of girder above. On page 254 of the "Carnegie" are a number of compression formulæ for steel columns. Most cities having building codes specify which formula to follow. For this problem follow that of New York.

On page 271 of the "Carnegie" is a table for plat and angle columns with 12″ web plates. This table is based on the American Bridge Co. formula for allowable stresses in compression members, but it will give the approximate sizes required by the other formulæ. The load in the lowest story is 337,000 pounds. The girder would probably be framed to the angles rather than to the web of the column. In this case the unsupported length around the web (axis 2-2 in the table on page 271) would be the distance between floor slabs or 10 feet. With this unsupported length a plate and angle column with a 12″ x ½″ web and four 6″ x 4″ x 9/16″ angles would carry 354,000 pounds. Its greatest $\frac{l}{r}$ (length in inches divided by radius of gyration in inches) is 120/2.01 or 46. The corresponding allowable stress from the table on page 254 is 12,530 pounds per square inch. Then 337,000 divided by 12,530 equals 26.9, which is the area in square inches which will be required to carry the load. Reference to the areas of column sections on page 271 shows that the column tentatively selected has this much area. Similarly the other section required will be respectively a 12″ x ⅜″ web with four 6″ x 4″ x ½″ angles, a 12″ x ⅜″ web with four 5″ x 3½″ x 7/16″ angles, a 12″ x ⅜″ web with four 5″ x 3½″ x ⅜″ angles, an 8″-34# H-beam, and a 6″-23.8# H-beam (for these last two see table on page 256). Very often it is cheaper not to change the column sizes in every story but only in alternate stories. This requires more material, but it saves labor in the fabricating shop. In such a case the 12″ x ½″ web with four 6″ x 4″ x 9/16″ angles would be used for the two lower stories, the 12″ x ⅜″ web with four 5″ x 3½″ x 7/16″ angles used for the next two stories, and the 8″-34# H-beam for the two upper stories.

The design of grillage foundations can be found in "Carnegie," and that of reinforced concrete foundations in the Corrugated Bar Co. handbook. The tables in the latter are very simple and require no explanation, but in the design of foundations the question of obtaining uniform settlement is of the utmost importance. Ledge rock, gravel and hardpan will yield but little if any under load, but other soils may yield enough to cause serious trouble. This can only be avoided by using unit pressure of such values that the settlement will be of no importance, and by so proportioning the sizes of the foundations that the settlement of all the foundations will be uniform. If they are proportioned for total live and dead loads, the initial settlement, due to the dead weight of the building before any live load is put on it, will be greater for the exterior than for the interior footings. If they are proportioned for dead load only, the initial settlement will be uniform, but the later addition of the live load will upset this uniformity. What is the maximum load per square foot that the soil can safely carry?*Should the allowable unit pressure on the soil be the same for both exterior and interior foundations? Should the footings sizes be proportioned from total load, dead load only, or some load between the two? If the settlement is not uniform, will there be enough difference in settlement to matter? Because of such complications the designing of foundations of any importance should be done by an expert engineer who can carefully weigh the different factors and design accordingly.

Mention has already been made of allowable stresses and deflections. In the case of concrete, many other stresses than those previously mentioned must be considered, and because our knowledge of concrete has advanced greatly since many of the building codes were written, and because many of them do not go into sufficient detail, the architect who wishes to design reinforced concrete would do well to obtain a copy of the "Report of the Joint Committee." Ten or twelve years ago the Association of Cement Manufacturers, the American Concrete Institute, the American Society of Civil Engineers, the American Society for Testing Materials, and the American Railway Engineering Association, each appointed representatives to serve as a "Joint Committee" on concrete and reinforced concrete. They made a final report about 1916, but several years later another similar committee was appointed to continue and revise the report of the original committee, and this later committee made in 1921 a tentative report. Copies of these reports may be obtained from the American Society of Civil Engineers. A careful study of them will show that the designing of reinforced concrete is a very complicated matter. Even today experts cannot agree upon any method of determining in advance what the strength of any particular mix of concrete will be, and upon the strength depends the allowable stresses to be used in design. But even more complicated are the problems caused by the monolithic character of concrete structures, *e.g.*, a steel beam is framed to a girder by means of connection angles and is designed as a single span supported at both ends on knife edge supports. The connection angles prevent it from bending as freely as it would if it were on knife edge supports and reduce the stresses at the middle of the beam. The tendency of the middle of the beam to deflect causes the upper part of the beam to pull away from the girder at the supports and stresses the rivets in the connection angles. But the whole design is safe. On the other hand, if it were a concrete beam framing into a concrete girder, the pulling away of the beam from the girder would produce a crack in the beam, and this crack would permit the beam to drop. So reinforcement must be provided to prevent this crack. How much must be provided at this and similar points, and how much can that at the center be reduced because of this continuous action? Then, too, in a concrete beam the question of diagonal tension must be studied and provided for, and so must the bond between the concrete and the reinforcement. From a practical standpoint, the problem of stopping points between pourings must also be cared for. For these reasons it is advisable for the average architect to confine his concrete designing to that on solid slabs, given on pages 61-66 inclusive of the Corrugated Bar Co's handbook, and leave to a trained engineer the designing of flat slabs and concrete beams and columns.

In conclusion, emphasis must be laid on the fact that none of the tables mentioned should be used without first studying all explanatory notes relating to them. The tables are correct and will give safe designs if they are correctly used, but no trained engineer would ever use a table unless he knew on just what it was based and just how and when it should be used.

*In the absence of satisfactory tests of the sustaining power of soils, these maximum allowable bearing values may be taken:

Solid ledge rock	100 tons per sq. ft.
Shale and hardpan	10 tons per sq. ft.
Gravel, compact sand and hard, yellow clay	6 tons per sq. ft.
Dry or wet sand of coarse or medium sized grains; hard, blue clay mixed or unmixed with sand; disintegrated ledge rock	5 tons per sq. ft.
Medium stiff or plastic clay mixed or unmixed with sand, or fine grained, dry sand	4 tons per sq. ft.
Fine grained wet sand (confined) . . .	3 tons per sq. ft.
Soft clay protected against lateral displacement	2 tons per sq. ft.

Definitions—(*a*) Solid ledge: Naturally formed rock normally requiring blasting for its removal.

(*b*) Shale: Laminated slate or clay rocks removable by picking.

(*c*) Hardpan: A thoroughly cemented mixture of sand and pebbles or of sand, pebbles and clay, with or without a mixture of boulders and difficult to remove by picking.

(*d*) Gravel: A natural uncemented mixture of coarse or medium grained sand with a substantial amount of pebbles.

(*e*) Sand (compact): Requiring picking for its removal.

(*f*) Sand (loose): Requiring shoveling only.

(*g*) Sand (medium grain): Individual grains readily distinguishable by eye, though not of pronounced size.

(*h*) Sand (fine grained): Individual grains distinguished by eye only with difficulty.

(*i*) Hard clay: Requiring picking for its removal.

(*j*) Disintegrated ledge rock: Residual deposits of decomposed ledge.

(*k*) Medium clay: Stiff and plastic, but capable of being spaded.

(*l*) Soft clay: Putty-like in consistency and changing shape readily under relatively slight pressure.

DECORATION & FURNITURE

The Style of Early American Interiors

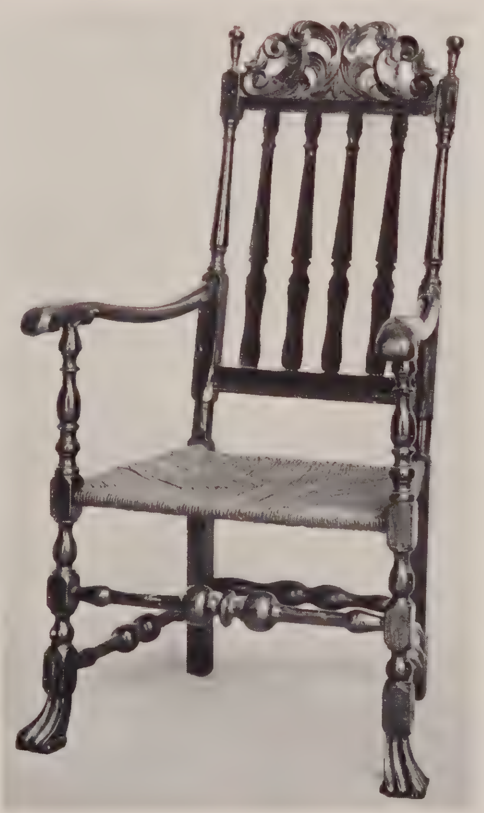
By AMELIA MUIR BALDWIN

COUNTRY house interiors of the early American type are fascinating subjects for study, because in their furnishing it is possible to preserve the feeling of the style in so many varying degrees of archæological accuracy.

A modern house may be almost as frugal and spare as the homes of the first settlers. An interior of this sort depends mainly on its architectural features,—the proportions of the low rooms, the frank treatment of exposed beams in the ceiling and the corners of the walls; sheathing used for one wall and white plaster, or a small patterned paper in an old design, on another; the simple framing of the fireplace; the informal, small paned windows. Everywhere there is an absence of sham and pretense, but there is also a very stimulating decorative effect due to contrasts in color and texture and focused ornament relieved by plain surfaces.

The furniture, of native woods,—pine, oak, maple, chestnut and cherry,—may be limited to the plainest of seventeenth century models. The chairs are then of the Windsor, splat back or slat back styles; the tables are gate-legged, tavern or butterfly; and all these pieces may have interesting and varied turnings which delight the eye by their decorative forms. Moreover, they give the room a pleasing sense of space.

Dressers may be filled with collections of old pewter or copper; chests are decorated with crude carving, inlay or jewel work of applied turned pieces, parts of which are picked out in black and red; the wall paper is printed in several shades of the same color or in black on a white ground. The black is particularly good when it is repeated on some of the mouldings of the furniture or by ironwork in andirons and lighting fixtures.

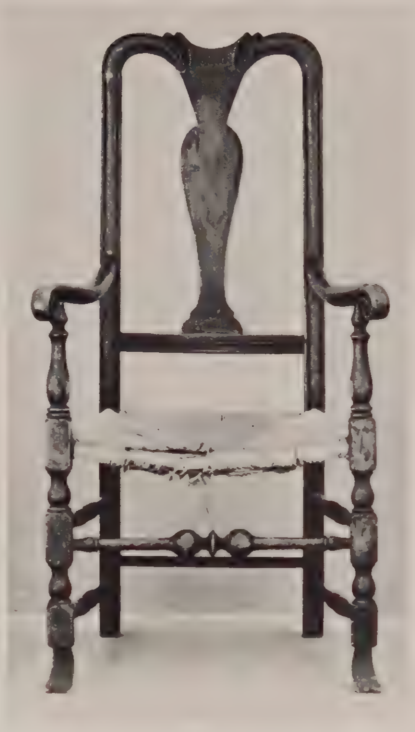

Bannister Back Maple Arm Chair from Metropolitan Museum of Art. American. Late Seventeenth Century

Old iron, pewter or brass sconces may be adapted or reproduced for electric bracket lights. Exceedingly good designs are now easily procurable, small enough to be in scale with the early type of house and its narrow mouldings, or the room may be lighted entirely by candlesticks or lamps connected with base plugs. This latter method gives a more informal effect and leaves the walls unobstructed, keeping their simplicity intact.

Floors may be of wood, either finished or painted, or of stone, brick or slate, with a few rag rugs not filling the space completely. Much of the feeling of this style of room is lost when the floor is entirely covered with rugs.

Curtains may be of handwoven linen, crewel work in not too large a pattern, printed India cottons or English chintzes. The glazed chintzes will emphasize the texture of polished sheathing and furniture, and their colors offer a wide choice in contrast and harmony. A ground of soft tan with a thin meandering design in blues, pinks, violet and greens blends into the colors in the woods of wall and furniture; brighter grounds can be made to harmonize with the colors of the rugs or painted floors. The beauty of old copper may be enhanced by using a similar color for curtains or rugs; the gray of pewter is repeated by gray stone or slate floors. Red tiled or brick floors harmonize with the natural red of cherry.

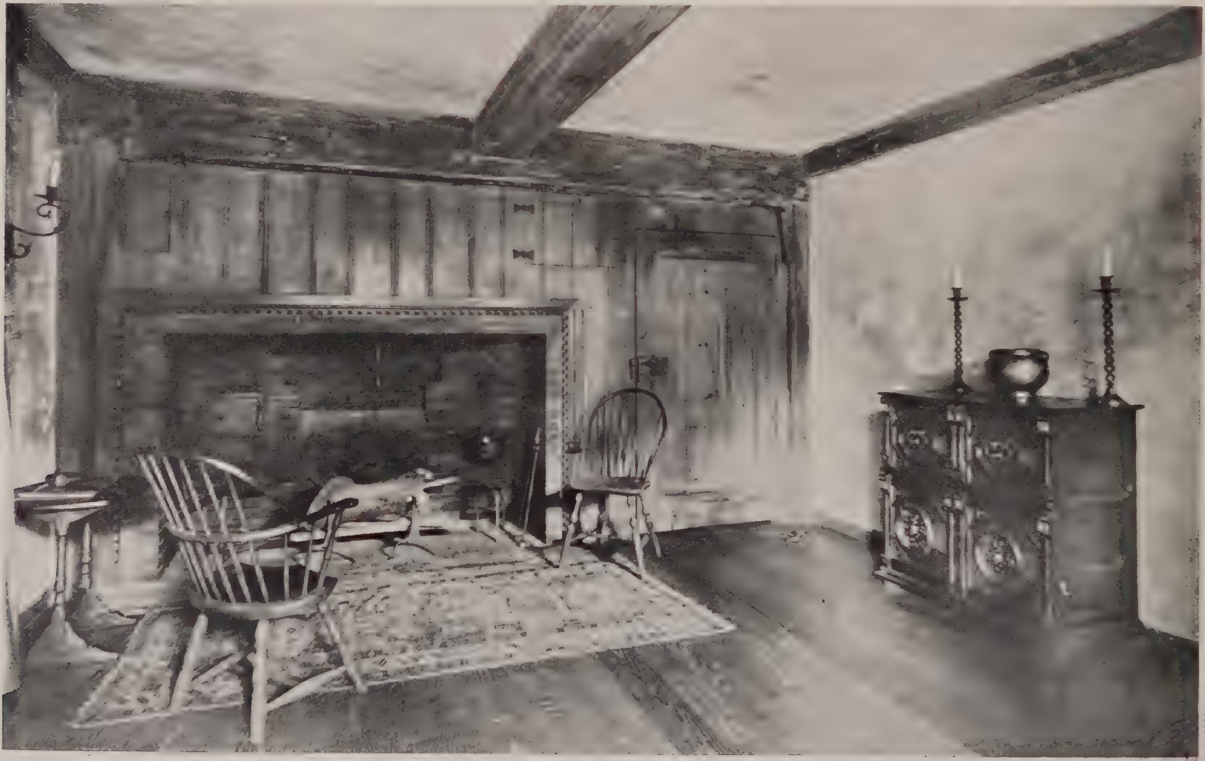
For the wall old portraits are ideal, and they should be framed in narrow black mouldings of low relief. I have had the pleasure of seeing several of these flat decorative paintings, of quite large sizes, framed in this way, hanging in the dining room of an old house, and I was impressed by the fact that they did not seem to crowd the small room, but became parts of the walls. Some excellent copies of old portraits, done in the same manner, have recently been made by able painters as commissions from descendants not fortunate enough to belong to the branches of the families which own the originals. This is an idea which might be adopted more generally. Smaller pictures in needle tapestry, stump work, or embroidery are full of interest and quaint charm. The old pieces are difficult to find, but that makes them all the more desirable. Wood engravings are appropriate and contribute another black to the color scheme. The walls need no decoration, however, excepting the structural treatment and emphasis of materials, to which I have referred. The only reason for putting something on the wall should be that it is interesting to look at for itself, as it is not necessary to the design of the room or to the essential feeling of the style.



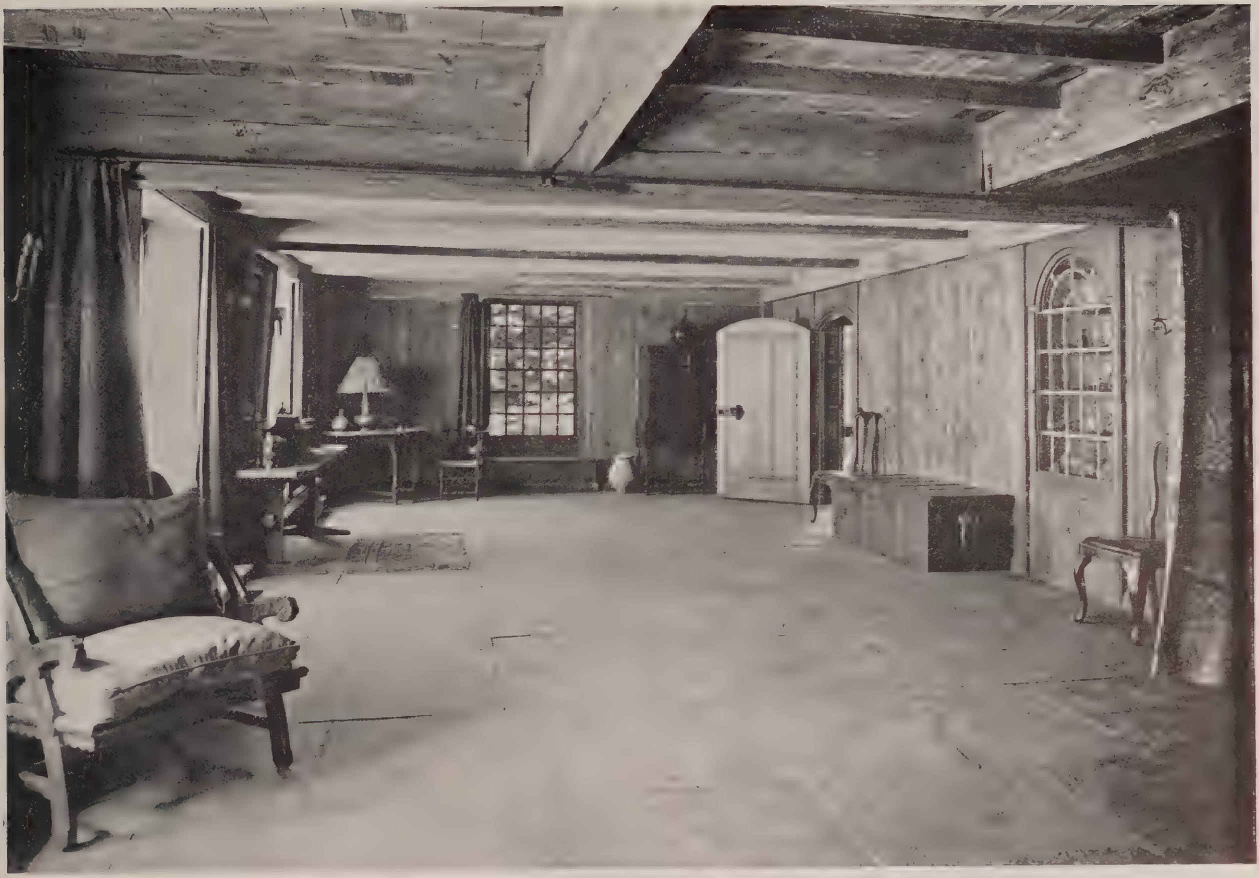
Early American Maple Arm Chair from Metropolitan Museum of Art

A clean-cut quality must be preserved, and it is just as pleasing to the eye as it ever was; but along with plumbing and electricity the modern household demands more comfortable chairs and sofas than those which our ancestors had. Side by side with changes in style the history of furniture is a record of successive improvements in the pieces made to be sat or lain upon. From the chest set against the wall the wainscot chair and settle were developed, and at first the backs and seats were still at right angles; but in the late seventeenth and early eighteenth centuries chairs were achieved whose moulded backs curved both vertically and horizontally in just the right places and on the right degrees to fit the human spine.

In a strictly period treatment of the early American interior a sofa would appear in the form of a curved back Windsor settle, with possibly a thin pad to soften the wooden seat, or a double chair of the rush seated, slat back style, or for the height of mid-seventeenth century luxury in this country, a long



Room of American Late Seventeenth Century Character in Background and Furnishings
House of B. A. Behrend, Esq., Boston
Richardson, Barott & Richardson, Architects



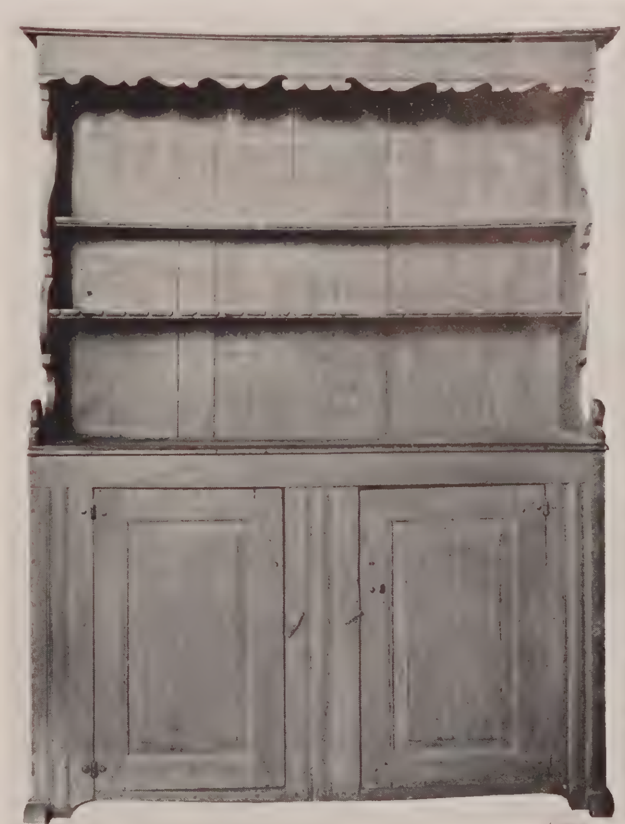
Living Room, House of Philip Richardson, Esq., Brookline, Mass.
Richardson, Barott & Richardson, Architects

Cromwell bench with upholstered seat and back covered in Turkey work or needle tapestry. Going back to English models for the less simple house of this type, a caned walnut Jacobean bench or a high backed William and Mary upholstered sofa could be used.

None of these pieces, however, can compare in comfort with a davenport or feather upholstered sofa, at least one of which will probably have to be introduced into the living room of the modern country house, no matter what its style of architecture is. This is part of the problem of suiting the style to present-day needs, and certainly one of the needs is for relaxation. A house with no upholstered furniture and no books excepting the bible and Pilgrim's Progress is a long way from book lined walls and easy chairs.

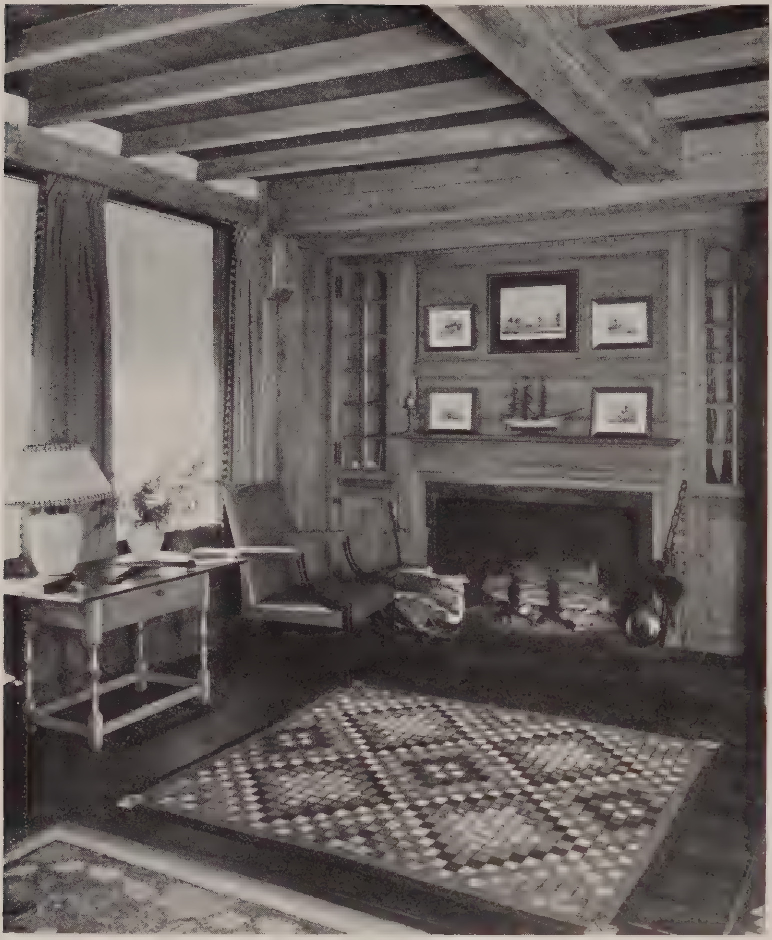
The problem is difficult in a very small interior, but in a fair sized room chests and cabinets against the walls, and the side chairs and tables can carry the period feeling so strongly that a few stuffed pieces do not spoil the room. The upholstery should be well tailored, and the davenport covered plain without tuftings. Dowdy, bulging lines are especially bad in a clean-cut room, and good lines harmonize with other good lines through their common excellence, no matter how different their periods.

Feather upholstery is supposed to be quite modern, having been brought to this country from



Courtesy of Shreve, Crump & Low Co.

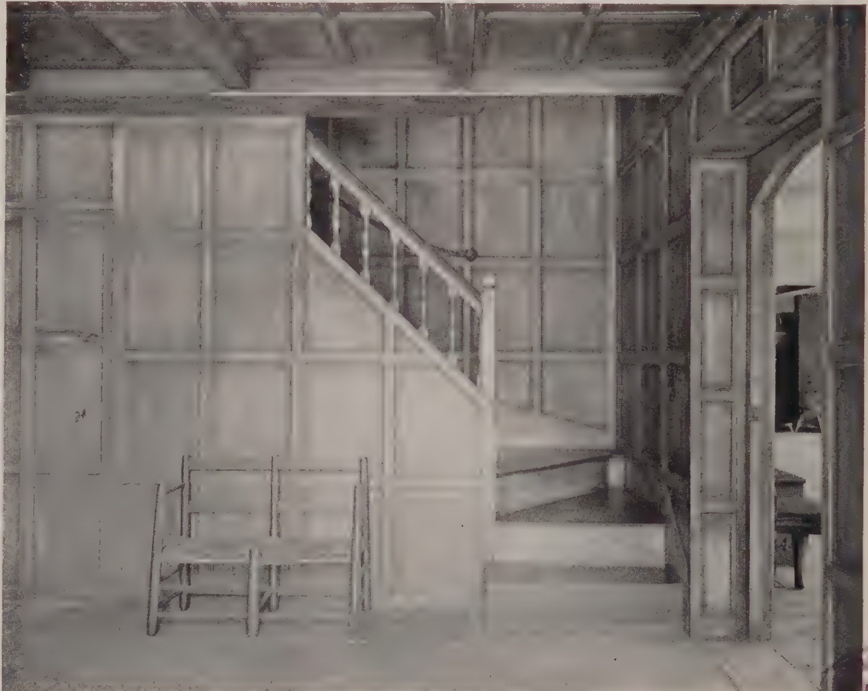
Early American Dresser



Study, House of B. F. W. Russell, Esq., Brookline, Mass.
Little & Russell, Architects
Natural pine walls and oak ceiling beams. Early American maple furniture

England at the time of the World's Fair in Chicago. I do not know at what time the so-called "squab cushion" began to be used in England, but I have seen in a photograph of a Jacobean interior a box sofa, upholstered with loose feather cushions and covered in chintz with a ruffled flounce which reached the floor. It may not have been in the room as originally furnished, but it had the air of belonging there, and it is the style of sofa which I like best for the early type of American house The straight line of the top of both back and arms is unobtrusive and restful; it looks well either against the wall or away from it, and the flounce has a quaint air of informality. A slip cover with a flounce on the usual davenport will give something of this effect. To enrich the scheme, as for example in furnishing a larger house, it is profitable to study not only the early styles in this country, but also the sources from which they sprang in England during the interesting period of transition from Gothic to renaissance.

Walls may be clothed in square Jacobean paneling, as being handsomer than sheathing. One or two fine pieces of furniture, such as a court cupboard or a melon-legged table, will add distinction to the simpler styles already mentioned. "Turkey carpets," often called Ushak rugs now, may be used as they were in seventeenth century England; fur rugs, especially black goat skins, also used at this time, may be adopted for the contrast they give to stone floors, and tapestries may be hung on the walls. The feeling of transition may be emphasized by combining, with discretion of course, furniture of all the periods from Henry VIII to William and Mary. There should be no crowding, however, as the spare feeling is absolutely essential to the style, however rich the furnishings. One tapestry will decorate a room, and handsome furniture needs space and a plain wall for its full effect. Something like this is seen in the rich austerity of Spanish interiors, where plastered walls are contrasted with



Hall and Staircase, House of Philip Richardson, Esq., Brookline, Mass.
Richardson, Barott & Richardson, Architects

OSTO
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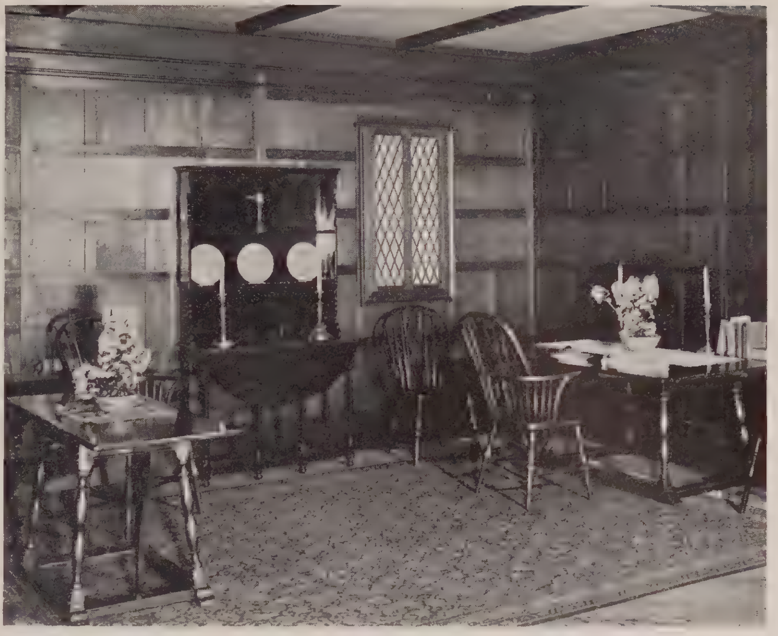
the dark wood of doors and furniture, and the richness of the fabrics used.

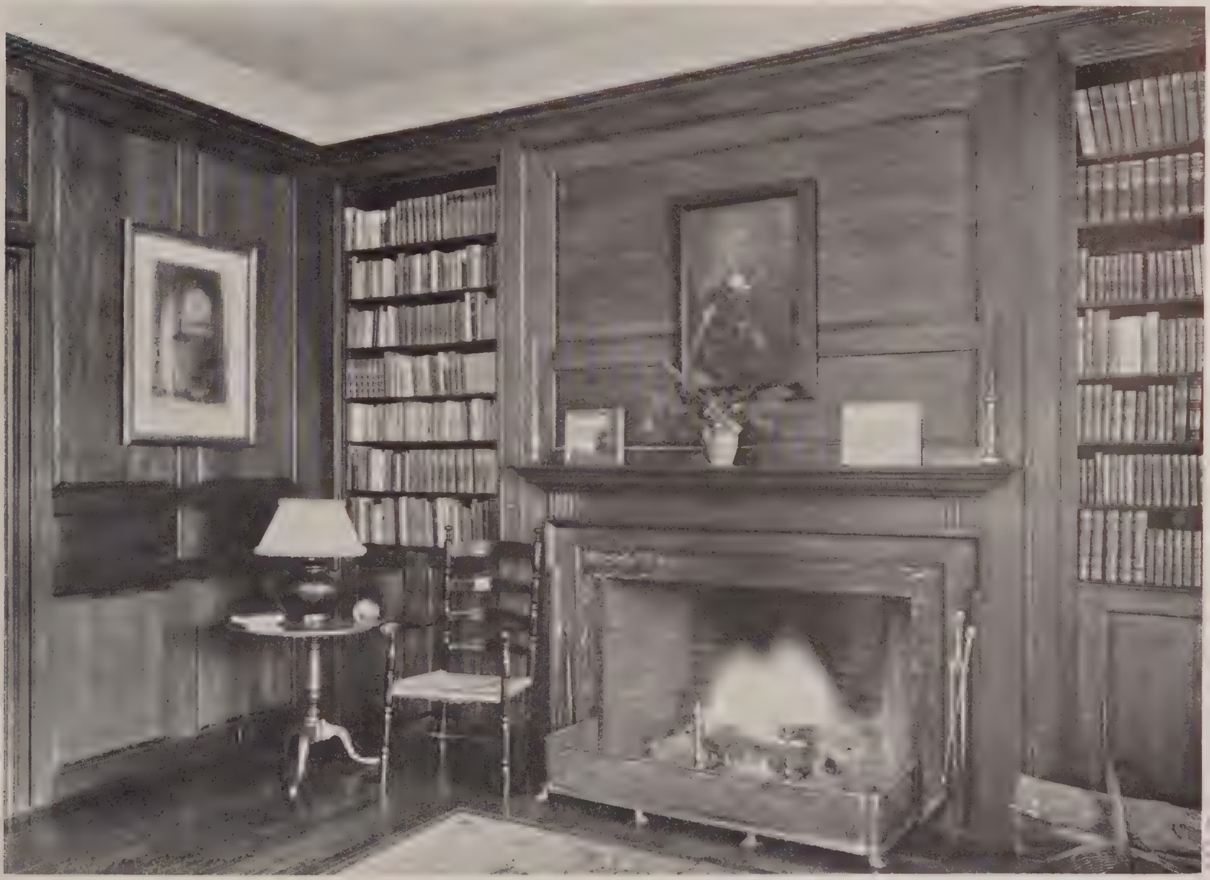


Courtesy of Erskine-Danforth Corp.

Modern Furniture Designed in Early American Spirit

For curtains a plain silk and wool casement cloth in ecru, or a basket weave in blue and green or blue and violet may be used, unlined. There should be but one set of curtains, hung frankly on rings with no heading to cover the rod. The sophistication of French headings or valances and the swathing of the window in two or three sets of curtains would spoil the whole room. Crewel work and chintz curtains must be lined to cover the wrong side of the material, but not interlined, the idea being to keep them as thin as possible so that they do not seem to project into the room. With the decorative Turkey carpets a rough silk and cotton damask in a design of the period for both curtains and furniture may repeat one of the colors of the carpet and the tan of the woodwork. Velvets, although in the feeling of the finer houses of the period, are not suitable for country houses used only in the summer.

Another fabric is very popular now for overmantels and furniture coverings,—a revival of the art of needle tapestry, which had its best period in England during the seventeenth century. When the tapestry looms had been established at Mortlake by James I, the women of England, already skilled with



Library, House of B. F. W. Russell, Esq., Brookline, Mass.
Little & Russell, Architects

Pine paneling in character of early eighteenth century with early maple furniture the needle, began to make in large quantities in their homes this sort of imitation of the woven tapestry. Beautiful wall panels in fine stitches have come down to us, American as well as English work, the earlier examples usually illustrating some biblical story and the later panels representing pastoral scenes. Coverings for stools, sofas and chairs, often coarse in texture and suited only for heavy oak furniture, are quite easily procurable, either in the originals or in reproductions, but a great many women of leisure are now doing this work for themselves from copies or adaptations of old designs. There is something rhythmic in the drawing of the threads through the canvas which makes it fascinating to do, and the result often shows much individuality and charm.

Courtesy of Shreve, Crump & Low Co.
American Late Seventeenth Century Chest

For an early American house of the sublimated variety I am now describing, repousse silver may take the place of pewter for the collector; Venetian glass and Delft ware are among the revivals which could be emphasized. A collection of early pine and maple furniture may be restored to such good condition that its surfaces are rich and lustrous, and modern reproductions now on the market give the same effect. A few Spanish pieces may appear in low turned fireside benches, or cabinets or tables. Curiously enough, the slanting line of the legs of Spanish tables occurs also in the simple butterfly tables, and they might be used together in some eclectic interior with pleasing results.

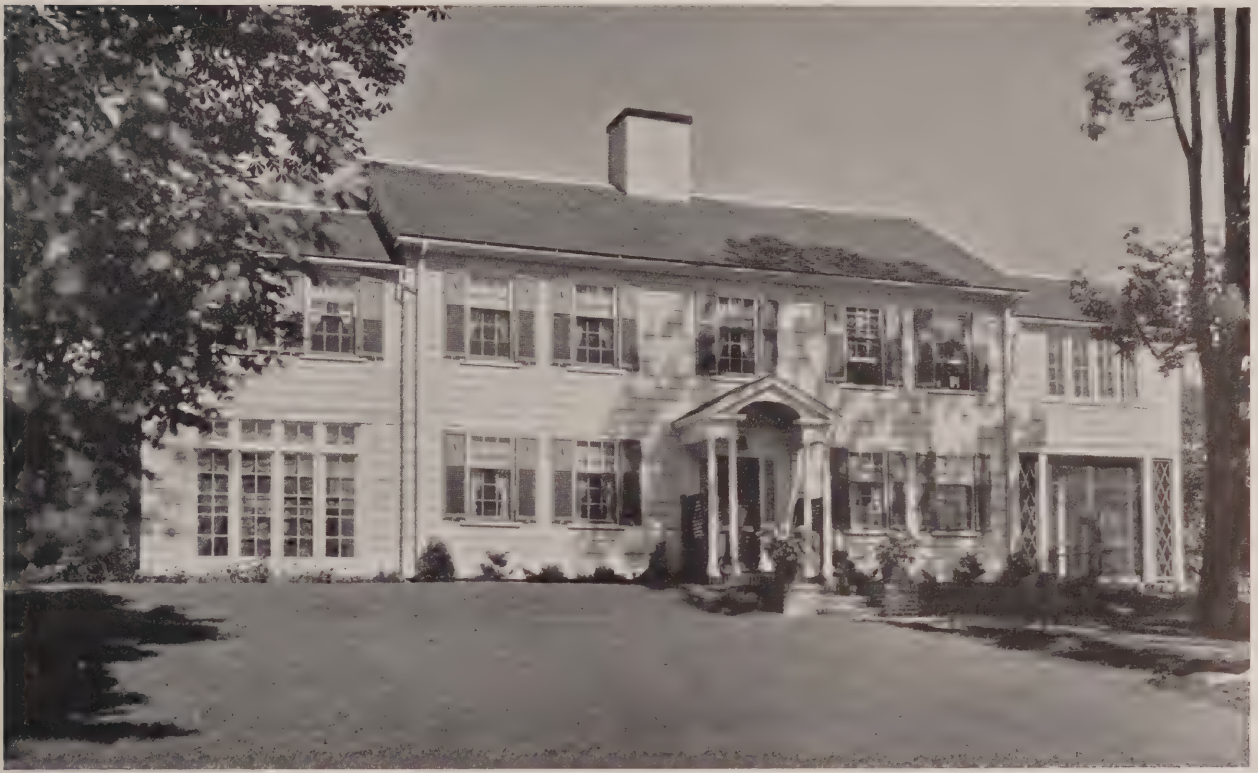
People of individual tastes will find this style of house most congenial, for it lends itself to specialization and the emphasis of preferences; but whatever is done, the contrasts of color and texture, the clean-cut, spare feeling and the informal but frank treatment of spaces and materials must not be lost, for they form the essence of the style.

It is not surprising that the early American house is becoming so popular with us now. Its exterior harmonizes with most landscapes in this country; the slant of gabled, pitch or gambrel roofs is repeated in the lines of hills or trees. Traditionally its rooms make a strong appeal to many of us, but their chief interest lies in their flexibility of treatment. As a medium of expression they are more finely attuned to gradations of expression than are the rooms of the later more classical period, which no longer completely satisfy us. We want something either more informal or more richly decorative than what we have had, and in the early American interiors we have a foundation to build on and develop a style distinctive of our own time.

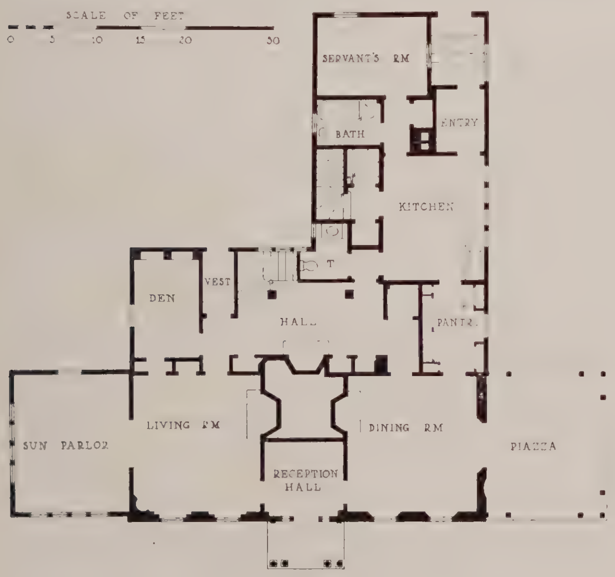
Courtesy of Kensington Manufacturing Co.
A Group of Modern Reproductions of Early American Furniture

Superintendent's House, Essex County Tuberculosis Hospital, Middleton, Massachusetts

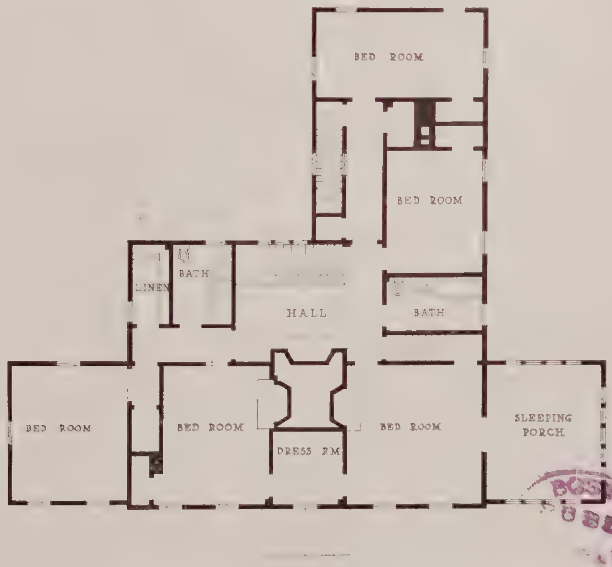
PEARE, QUINER, NEVIN & CHICKERING, ARCHITECTS



FOR this institution it was necessary to combine the acreage of several old farms. Upon one of these estates was an old building which was remodeled for the home of the hospital's superintendent. The structure was enlarged by adding the wings at the ends, the exterior was covered with shingles finished white, and the roof with shingles stained silver gray. The fine old stack chimney was retained, but the original steep, narrow stairway was removed, and a new staircase of colonial design placed in one of the larger rooms where the original fireplace with its crane was restored. The best of the old woodwork was also retained, and both old and new woodwork painted ivory.



FIRST FLOOR PLAN



SECOND FLOOR PLAN

BOSTON PUBLIC LIBRARY

EDITORIAL COMMENT

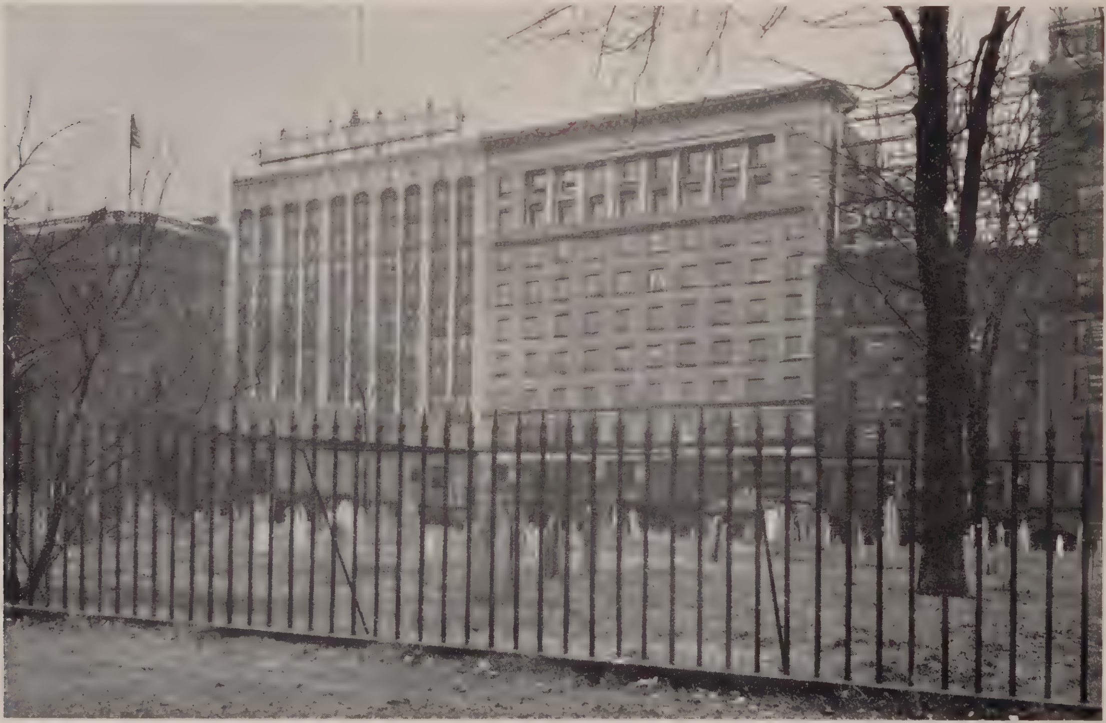
ORDERLY STREET ARCHITECTURE

TO a critic of architecture there is an obvious defect in our urban building that contributes largely to the restless appearance of our streets; it is a defect that can easily be remedied, granting its recognition and co-operation between architect and client. It undoubtedly expresses a trait of Americanism, commendable enough in certain respects, but fatal to orderly architectural development, and it is part of the cult of individualism which prompts architect and client alike to concentrate attention on the design of a single building and ignore its relation to the environment and the effect it will produce in the architectural development of a block facade.

The average American city presents a motley of styles, sizes and heights in the buildings of even one short block. Whether this striving for dominance by every 20- to 50-foot facade is due to the demand of the owner that his building shall be a perpetual advertisement, or to the desire of the architect to give expression to his personal tastes, the result is chaos and is the first thing to be condemned and corrected if we are to have really beautiful and practical cities.

While the blame for this condition is generally placed on the owner, we feel that architects who give sufficient thought to the benefits derived from orderly building could with but little difficulty change the public attitude if that really is the impediment. The standard which should apply in city building is admirably expressed in a newspaper article by Robert Lynd, a distinguished member of the Architecture Club, recently established in London. "The secret of good architecture," he says, "is much the same as the secret of good manners. It is a sort of courtesy in brick and stone—a grace that makes the best of its surroundings, in obedience to a code. It is this courtesy that forbids showiness or freakishness in private houses as in private conduct. It has been said with some wisdom that all good architecture should be monotonous, for a beautiful house will differ from its neighbors no more than a good-mannered man from his. That is to say it should not only be beautiful in itself but beautiful as part of its environment. This is not a check on individuality but only on self-importance. Genius is for the most part a capacity for making an individual use of a monotonous pattern. It required more genius to build a monotonous row of Georgian houses than a restless avenue of Victorian villas."

This standard can in perhaps a lesser degree be applied with profit to commercial structures. That it is worthy of being tried is well shown in this illustration from Boston. Surely no styles could be greater in diversity than classic and Gothic, yet the architects—in this instance the same for both buildings—have produced in these styles individuality in the separate buildings and have secured a satisfactory ensemble through the simple means of carrying the dominant horizontal lines of one building across the facade of the other.



The Little and Colonial Buildings, Boston, Viewed from the Common

Blackall, Clapp & Whittemore, Architects

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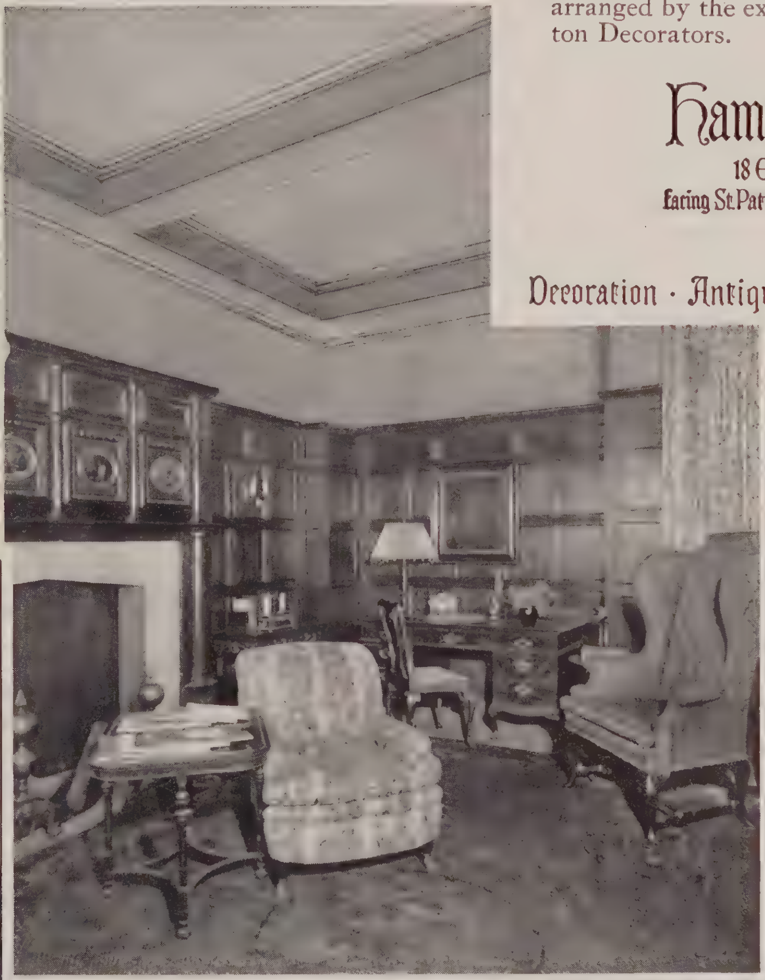

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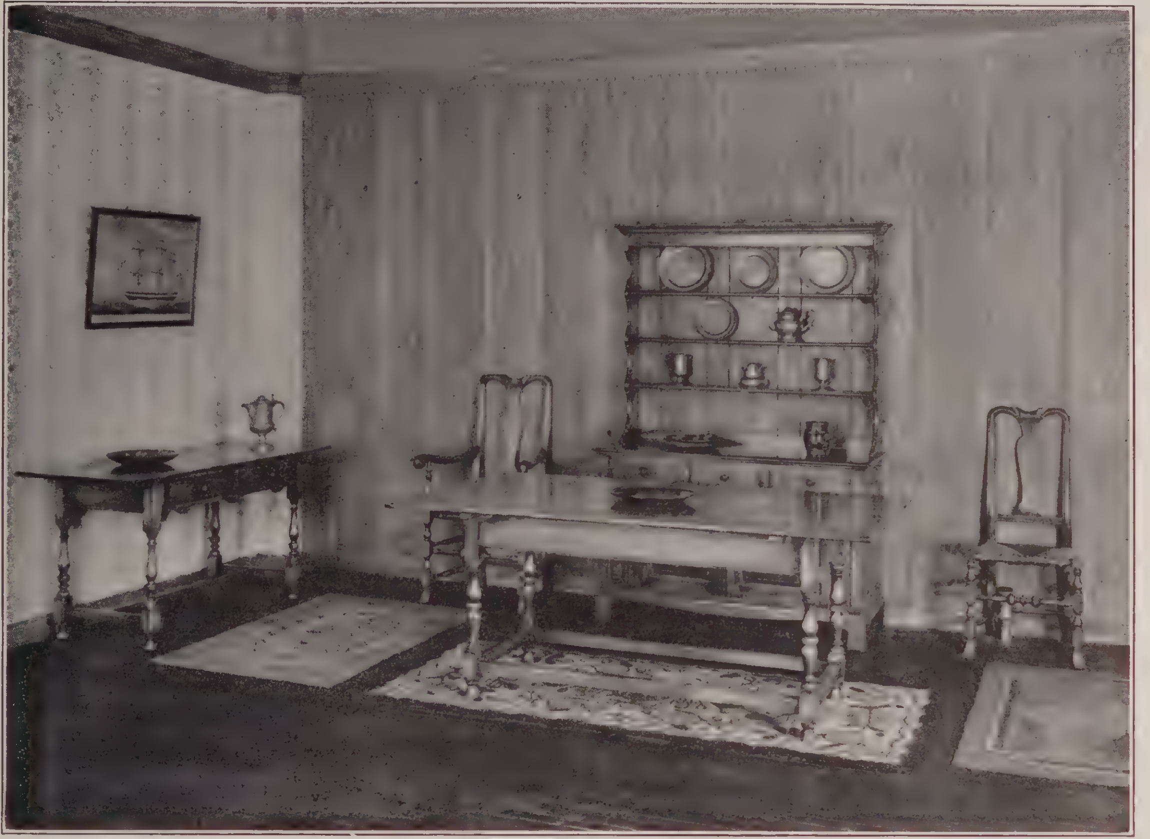

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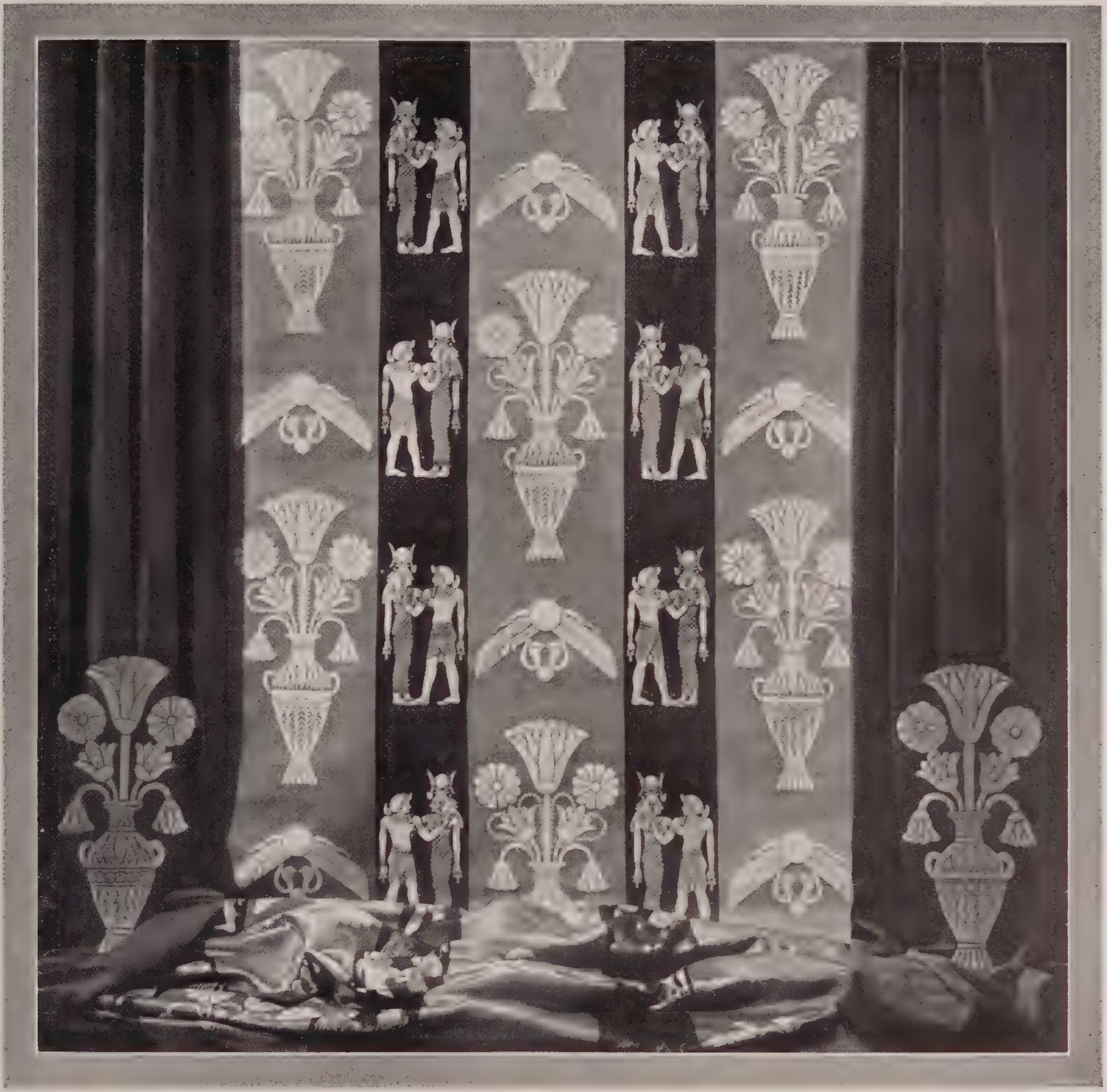

An example of pure Egyptian design is this Schumacher Damask

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FitzRoy Carrington, 707 Fifth Ave.—Engravings and woodcuts by Dürer; "Some Masters of Lithography."

Daniel Gallery, 2 West 47th St.—Water colors by Owen Merton.

Durand-Ruel Galleries, 12 East 57th St.—Exhibition of pastels.

Mrs. Ehrich's Gallery, 707 Fifth Ave.—Exhibition of metal work, linens, Cantagalli glass and antique furniture.

Fearon Galleries, 25 West 54th St.—Paintings by Raeburn, Gainsborough, Cotes and Reynolds.

Folsom Galleries, 104 West 57th St.—Paintings by Blakelock, Twachtman, Inness, Wyant and Keith.

Grand Central Galleries, 6th floor, Grand Central Terminal. Opening exhibition of American painting and sculpture.

Harlow Gallery, 712 Fifth Ave.—Etchings by Zorn and paintings by Carl Rungius.

The Misses Hill Gallery, 607 Fifth Ave.—Decorative paintings by Frank Townsend Hutchens.

Kennedy Galleries, 693 Fifth Ave.—Water color drawings by A. O. Lamplough.

Kingore Galleries, 668 Fifth Ave.—Portraits by Edmund Pizzella.

Kraushaar Galleries, 680 Fifth Ave.—Paintings by John Sloan.

Lewis & Simmons, 612 Fifth Ave.—Old masters and Barbizon paintings.

Macbeth Galleries, 450 Fifth Ave.—Paintings by Maurice Braun; paintings by Catharine Wharton Morris.

Metropolitan Museum, Central Park at 82nd St.—Loan exhibition of Chinese paintings; loan exhibition of old English ship models; loan exhibition of sculpture by Degas; George Fuller Centennial Exhibition.

Montross Gallery, 550 Fifth Ave.—Paintings by Vincent Van Gogh.

Mussmann Gallery, 144 West 57th St.—Etchings by American artists.

National Sculpture Society.—Indoor and outdoor exhibition of American sculpture at the museums located at 156th St. and Broadway, to August 1.

N. Y. Public Library, Fifth Ave. and 42nd St.—Etchings by Whistler; "Making of a Japanese Print."

Ralston Galleries, 4 East 46th St.—XVIII century English portraits and Barbizon paintings.

Rehn Gallery, 6 West 50th St.—Paintings by Twachtman, Weir, Dewing, Hassam and others.

Reinhardt Galleries, 606 Fifth Ave.—Ancient Indian and Graeco-Buddhist sculpture.

Schwartz Gallery, 14 East 46th St.—Exhibition of modern etchings.

Scott & Fowles Galleries, 667 Fifth Ave.—Water colors by Childe Hassam and sculpture by Sudbinin.

Wiener Werkstaette of America, 581 Fifth Ave.—Exhibition of Viennese art.

Howard Young Galleries, 620 Fifth Ave.—American and European paintings.

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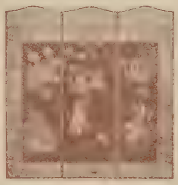

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Wallpaper, Its History, Design and Use

By Phyllis Ackerman, Ph.D.

The revival of interest in wall paper as a decorative medium, especially in its current use with glazes and painted woodwork, makes this book of special value. It is distinctly practical, and in addition to showing the precedent for wall paper design, it indicates the types of paper available today and gives numerous suggestions for unusual effects. 268 pp., 5½ x 8¼ ins.; cloth binding.

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Spanish Interiors and Furniture

By Arthur Byne and Mildred Stapley

This portfolio of 200 plates, published in four parts, provides a selection of the best examples of Spanish domestic interior architecture and furnishing from the 16th to the 18th century. The decorative accessories such as tiles, woodwork, pottery and fabrics, so essential to interpretation of the Spanish style, are fully and clearly illustrated. 10¾ x 13¾ ins.; paper covers.

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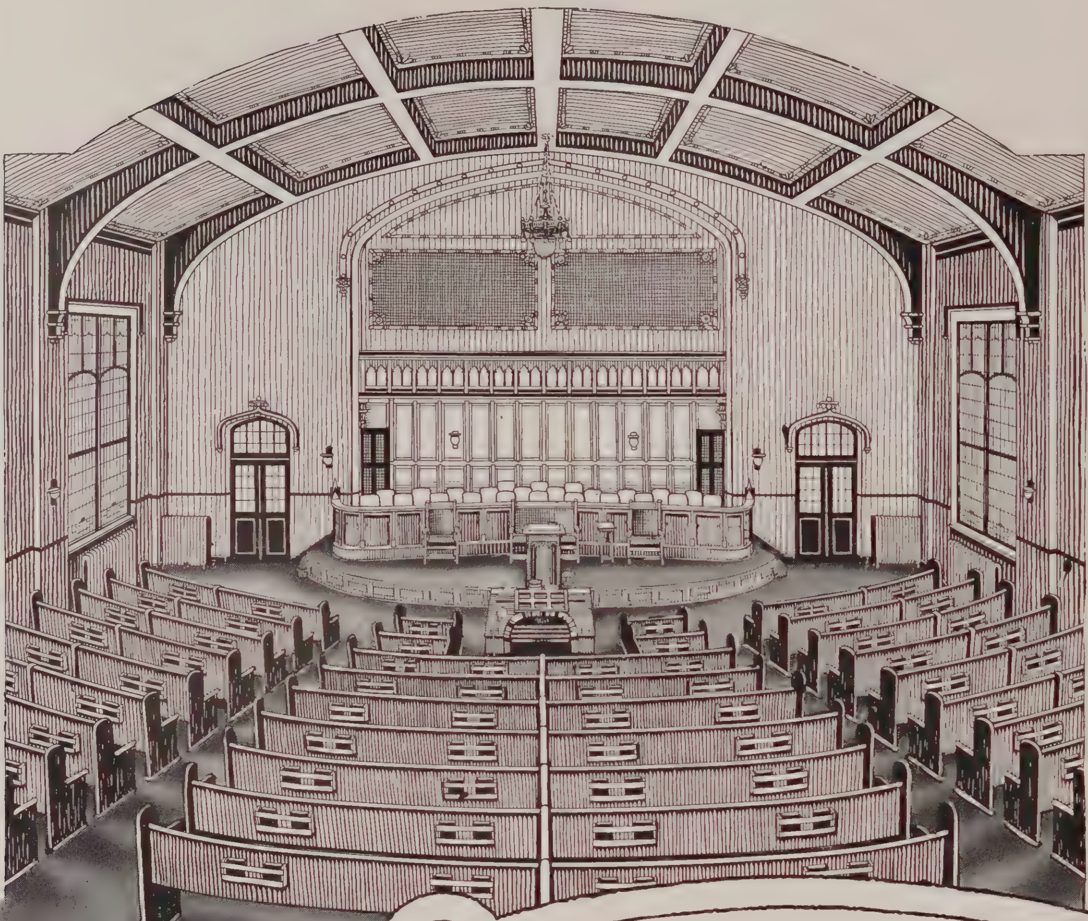

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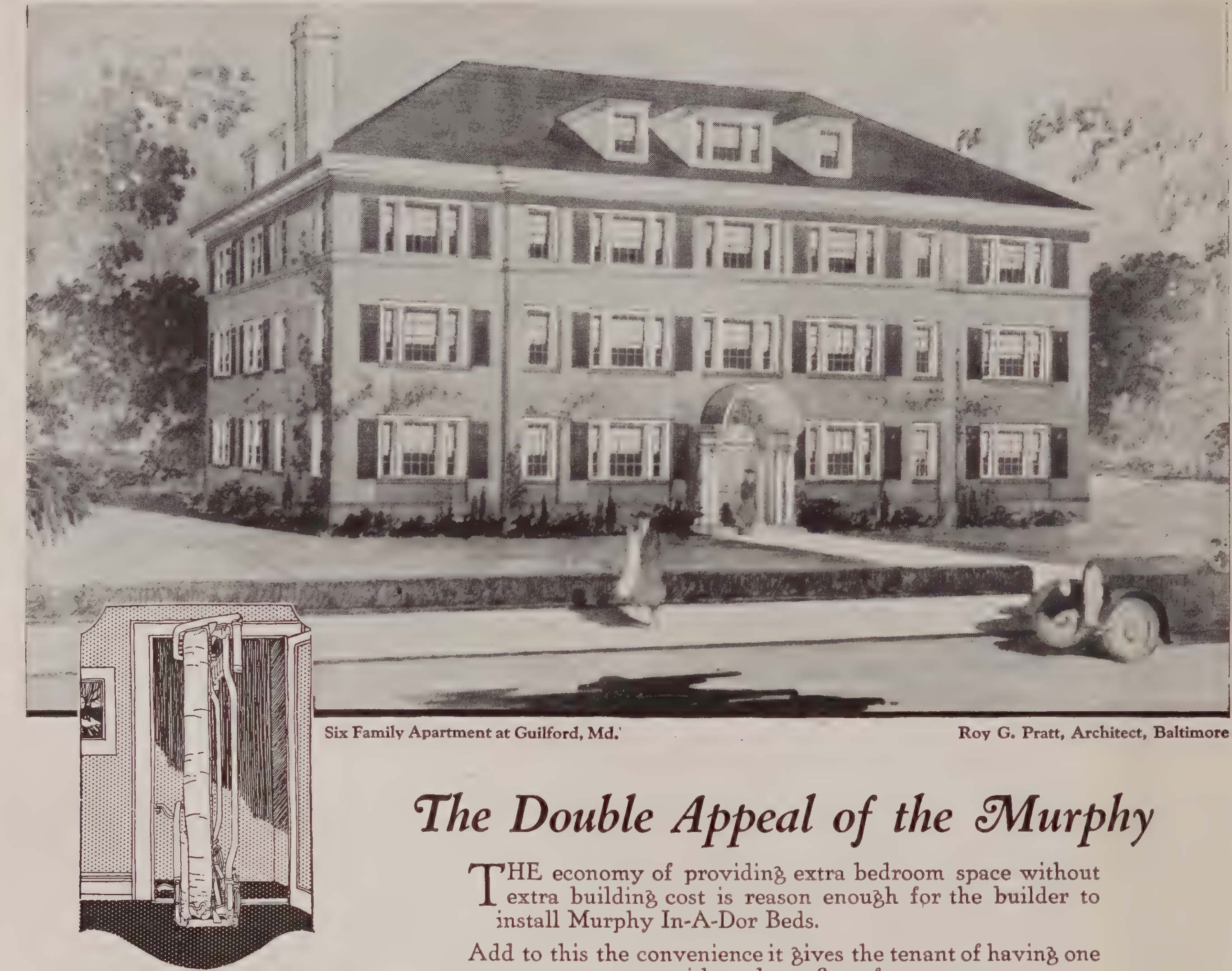

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Roy G. Pratt, Architect, Baltimore

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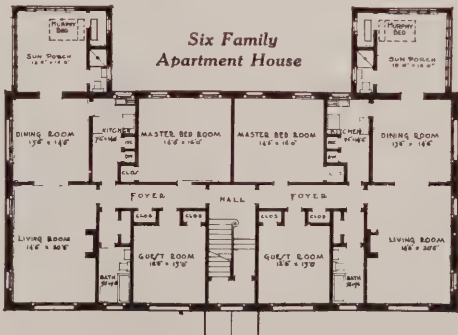
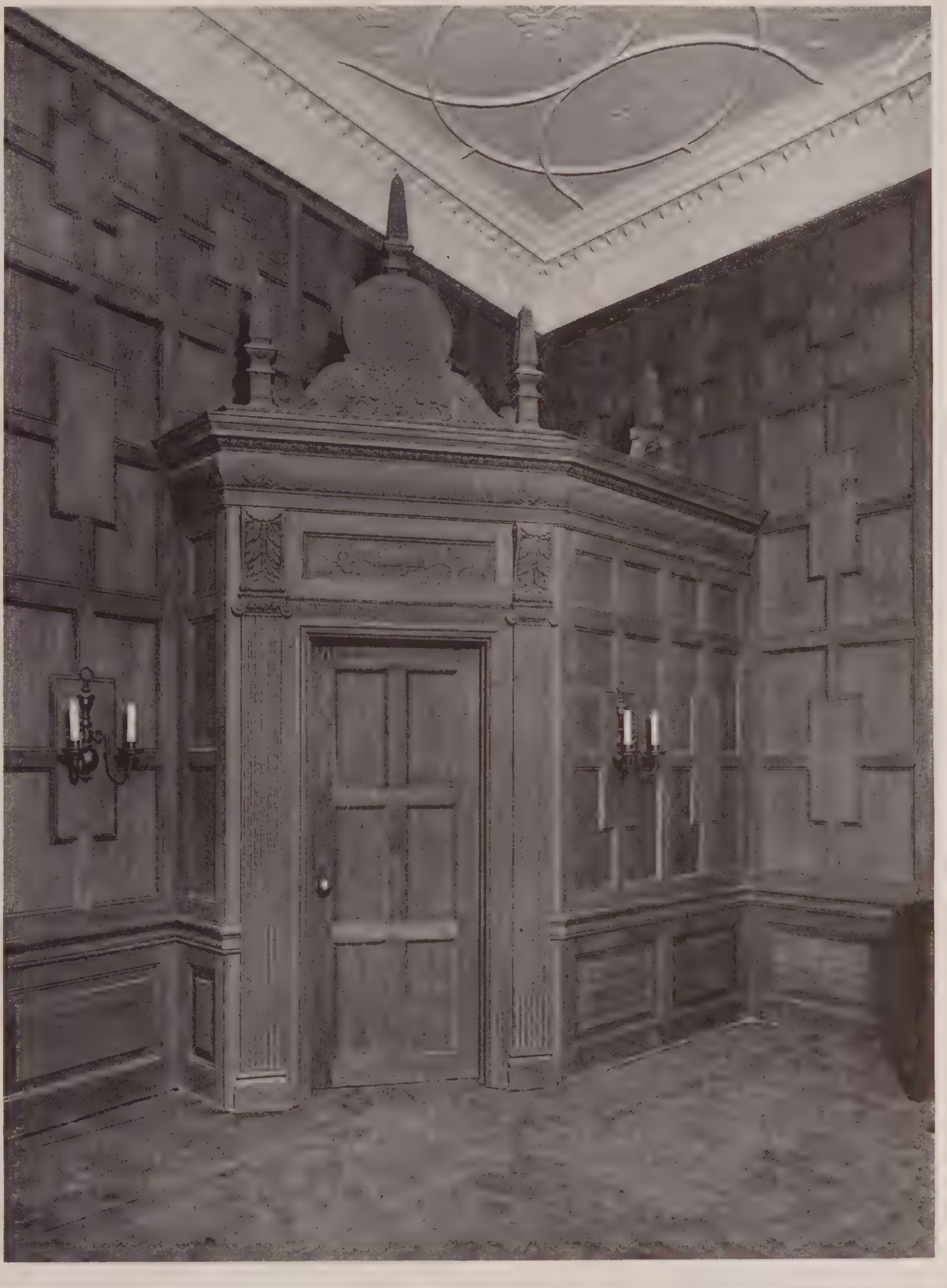


Typical Floor Plan



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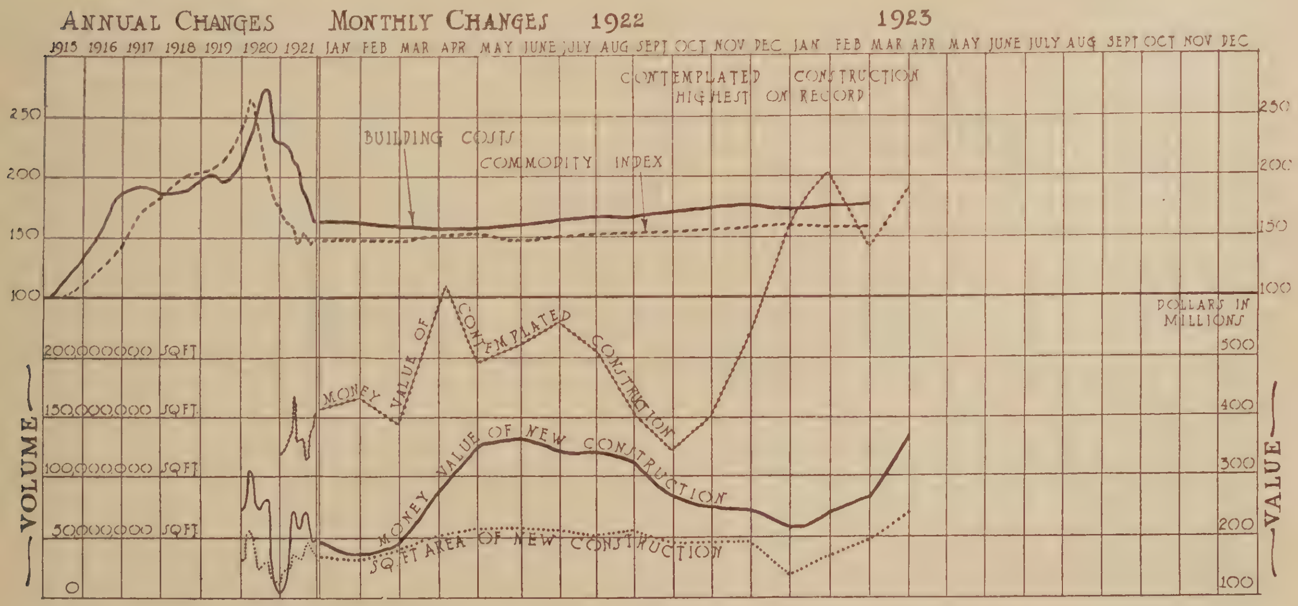
Information on economic aspects of construction and direct service for architects on subjects allied to building, through members of THE FORUM Consultation Committee

The Building Situation

AS this review is written, on April 10, building activity continues in amazing volume despite the heavy increase in building costs. Figures indicate that the total volume of building for the first quarter has been greater than in any similar period, amounting to 23 per cent more than for the similar period of 1922. This information is particularly interesting in view of the fact that the figures given in the Annual Building Survey and Forecast prepared by THE FORUM January 1, 1923, indicated a volume of construction for 1923 to be 22.6 per cent greater than in 1922. Carrying out these figures in general classifications, this forecast has not varied more than one-half of 1 per cent from the actual figures reported during this first quarter.

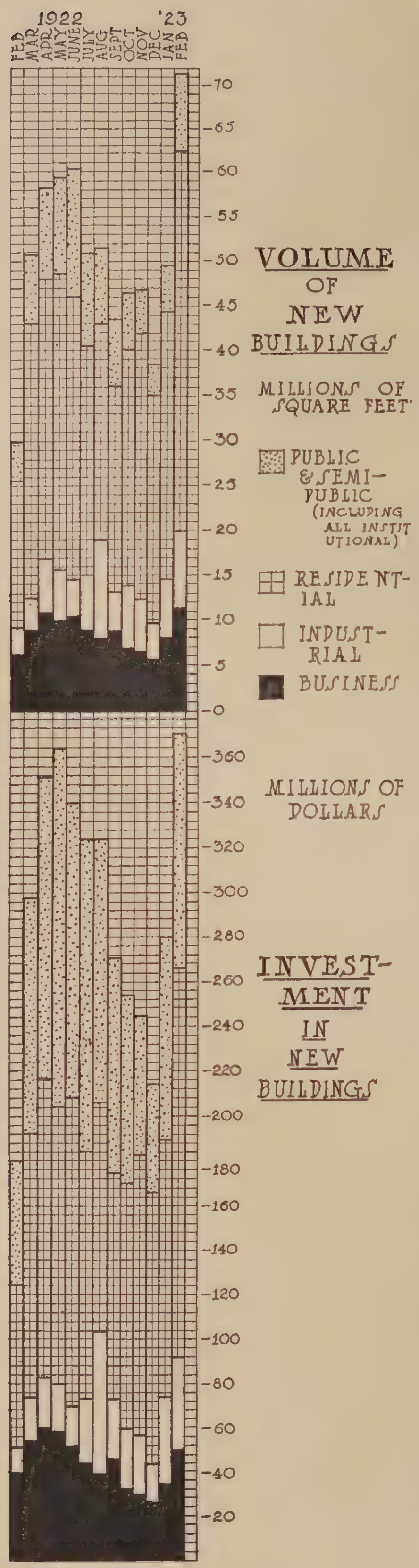
At the present time an increase in building costs seems to be reaching a peak, with some possibility of a slightly downward trend appearing by the first of June. Architects almost everywhere are reporting great activity in their offices, and the shortage of good draftsmen has at no time been more evident than at present. The general type of work being carried out by architects is of a particularly high class nature. The constitutionality of the tax-exemption act in the New York district has been upheld by the appellate court.

We now enter the period of labor disturbances in the building trades, and from various sections of the country come reports of proposed strikes. At many points in the production field, notably in steel plants, a voluntary increase of wages has been granted, and it is believed that building employers and building labor will get together on a reasonable basis. The transportation situation is becoming better as far as the shipment of building materials is concerned. It would seem that the present prosperity in the building field is sound in nature and will endure over a considerable period,—not at the present abnormal rate, but in volume sufficient to satisfy the industry.



THESE various important factors of change in the building situation are recorded in the chart given here: (1) *Building Costs.* This includes the cost of labor and materials; the index point is a composite of all available reports in basic materials and labor costs under national averages. (2) *Commodity Index.* Index figure determined by the United States Department of Commerce. (3) *Money Value of Contemplated Construction.* Value of buildings for which plans have been filed based on reports of the United States Chamber of Commerce, F. W. Dodge Co., and *Engineering News-Record.* (4) *Money Value of New Construction.* Total valuation of all contracts actually let. The dollar scale is at the right of the chart in millions. (5) *Square Foot Area of New Construction.* The measured volume of new buildings. The square foot measure is at the left of the chart. The variation of distances between the value and volume lines represents a square foot cost which is determined first, by the trend of building costs, and second, by the quality of construction.

Factors of Fluctuation in Building Costs



THE above chart in the upper part indicates the approximate division of the money invested in new building, and in the lower part the number of square feet represented by new construction. Building construction is divided into four general classes permitting the relative importance of each field to be visualized, while the total of each monthly column shows the entire volume of investment.

MONTHLY TREND OF BUILDING COSTS

Under this heading will be found each month a discussion of the trend of building costs which provides information as to the various important factors affecting its upward or downward course. Items of information as to cubic foot costs and other data of importance will be found here.

DURING the month of March the costs of building took a sharp upward turn, due to increases in labor rates and in the cost of steel, plumbing materials and practically all building commodities. The important factor of price of common labor has increased now to an average cost of 50 cents per hour as opposed to 35 cents eight or nine months ago. The rise in steel was from $2.25 to $2.50 per 100 pounds in the mill. On plumbing supplies two or three increases have taken effect within the last 45 days, bringing the general average cost up possibly 20 per cent.

In the opinion of *Engineering News-Record*, increased production rather than higher prices or more extensive use of credits appears as a ruling factor in "the maintenance of strength and confidence in industry and trade at the outset of the spring season. The construction industry, particularly, has experienced only such slackening as was caused by weather conditions, transportation shortage and scarcity of skilled labor, principally bricklayers and plasterers. Conditions, generally, have steadily improved during the winter, so that it is difficult to cite an industry which is not operating close to capacity. The consuming capacity of the country, with the increased employment of workers, at advanced wages in some industries, is greater now than at any time in the last two years."

Current building trades wage rates as reported by *Engineering News-Record* are presented in the accompanying tabulation as a basis for estimating labor costs on a construction project.

Local building labor conditions are approximately thus:

In the *New York* area a definite shortage of good mechanics, with a threat of a strike or a demand for increases of approximately $1 a day in several trades.

Chicago. An agreement has recently been signed by the Building Construction Employers' Association and the Building Trades Council recognizing the principles of the Landis award for a period of three years. This will help to stabilize costs in Chicago, if carried out in good faith by both parties.

In the *South* there is still some surplus of building trades mechanics, which is being reduced by increased building activity.

In the *Far West* available labor is fully employed, except in certain states such as Idaho where there is little building activity.

Detroit reports all available building trades mechanics busy, with no prospect of strikes.

In a number of cities wage scales higher than those indicated in this tabulation are being offered in order to keep good men on important jobs. This condition is true in Minneapolis, St. Louis, New York and other centers of unusual building activity.

CURRENT BUILDING TRADES WAGE RATES PER HOUR

(Higher rates indicated by +, decreases by –)

Cities	Bricklayers	Carpenters	Hoisting engineers	Hod carriers	Pile drivers	Structural iron workers	Common labor
Atlanta	+$1.12½	$0.70	$0.70	$0.30	. . . . .	$0.65	$0.30 @ .35
Baltimore	1.25	.80 @ .90	.80 @ 1.00	.87½	$0.65	.80 @ 1.00	.30 @ .45
Birmingham	1.00	.75	.50 @ 1.00	.15 @ .25	. . . . .	1.00	.20 @ .25
Boston	1.25	1.00	.90 @ 1.00	.80	1.00	1.00	.60
Cincinnati	1.25	1.00	1.00	.77½	1.00	1.00	.40 @ .60
Chicago	1.10	1.00	1.10	. . . . .	1.10	1.05	.72½
Cleveland	+1.40	+1.25	+1.25	+.87½	+1.00	+1.25	+.87½
Dallas	1.37½	1.00	1.00	.40	.87½	1.00	.30 @ .50
Denver	1.25	1.00	1.00	.75 @ .81¼	1.00	1.03⅛	.35 @ .55
Detroit	1.12½	.80	.80 @ .90	.50 @ .60	1.00	.60 @ .80	.50
Kansas City	1.12½	1.00	1.00 @ 1.25	.65	1.00	1.00	+.40 @ .75
Los Angeles	1.25	1.00	1.00	.50 @ .62½	. . . . .	.87½ @ 1.00	.50
Minneapolis	1.00	.80	.80	.65	. . . . .	.80	.35 @ .50
Montreal	.90	.65	.50	.30	.50	.65	.25
New Orleans	1.00	.85	.90	.65	.80	1.00	.35 @ .40
New York	1.25	1.12½	1.25	.87½	1.00	1.12½	+.45 @ .70
Pittsburgh	1.30	+1.20	+1.12½	.90	. . . . .	1.00	.50
St. Louis	+1.50	1.10	1.12½	+1.00	1.12	+1.25	+.40 @ .67½
San Francisco	1.25	1.00	1.00	.81¼	1.00	1.12½	.50 @ .56¼
Seattle	1.12½	.87½	.87½ @ 1.00	.93¾	1.00	.90 @ 1.00	.30 @ .70
Philadelphia	+1.37½	+1.12½	+1.00	.75 @ 1.00	+1.10	+1.10	+.50 @ .65

BUILDING MATERIAL PRICES

Table Showing Average Prices Paid by Contractors for Building Materials at Local Distributing Points as of Mar. 1, 1923. Prepared by Division of Building and Housing of the Department of Commerce from Prices Secured through the Bureau of Census

			Mass.		Conn.	N. Y.	Penn.		Md.	Va.	W. Va.	S. C.	Ga.	Mich.					Iowa	
Commodity	Size or Condition	Unit	Fitchburg	Haverhill	New London	Buffalo	Pittsburgh	Erie	Baltimore	Richmond	Fairmont	Columbia	Savannah	Detroit	Pontiac	Bay City	Saginaw	Lansing	Waterloo	Council Bluffs
Common Brick		1,000	$24.00	$24.00	$30.00	$20.12	$16.00	.....	$20.00	$18.25	$24.00	$12.00	$17.50	$17.50	$16.00	$14.00	$13.50	$14.50	$14.80	$16.50
Portland Cement	Excl. of containers	Bbl.	3.20	3.40	3.68	2.78	$3.10	$3.40	3.25	2.85	2.85	3.75	3.85	.....	2.65	.....	2.85	2.70	2.90	3.10
Yellow Pine No. 1	Dimension 2x4-16' S1S1E	M.	75.00	56.00	65.00	49.00	55.00	52.00	40.00	.....	.....	.....	30.00	50.00	50.00	45.00	58.00	52.00	47.00	50.00
Douglas Fir No. 1	Dimension 2x4-16' S1S1E	M.	.....	.....	55.00	.....	.....	.....	.....	.....	.....	.....	.....	50.00	.....	.....	58.00	.....	48.00	48.00
N. Carolina Pine No. 1	Dimension 2x4-16' S1S1E	M.	.....	.....	.....	.....	.....	.....	.....	.....	50.00	24.00	30.00	.....	.....	.....	.....	.....	.....	.....
Common Boards No. 1	1x6	M.	45.00	44.00	45.00	45.00	52.00	50.00	.....	.....	50.00	30.00	.....	50.00	50.00	42.00	.....	50.00	43.00	48.00
Y. P. Flooring E. G. "C"	1x4-10'-16'	M.	.....	90.00	110.00	.....	82.00	115.00	.....	.....	112.00	100.00	.....	.....	75.00	75.00	110.00	75.00	93.00	100.00
Douglas Fir V. G. No. 2	1x4-10'-16'	M.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	75.00	.....	.....	110.00	.....	93.00	100.00
Red Cedar Shingles	Extra clear 16" 5 to 2	100 sq. ft.	7.32	6.00	6.00	6.00	6.00	6.00	11.20	.....	.....	.....	.....	6.50	7.00	7.00	7.50	6.50	6.00	6.80
Cypress Shingles	Extra clear 16" 5 to 2	100 sq. ft.	.....	.....	.....	.....	.....	.....	.....	.....	7.25	.....	9.50	.....	.....	7.25	7.50	.....	.....	.....
Composition Shingles	Crushed slate surfaced	100 sq. ft.	7.75	7.00	8.00	.....	.....	6.50	.....	6.75	6.75	6.25	6.50	.....	7.00	6.90	6.00	7.00	7.00	.....
Gypsum Plaster Board	⅜"	1,000 sq. ft.	.....	40.00	50.00	45.00	37.50	45.00	32.50	32.00	32.00	35.00	40.00	30.00	40.00	40.00	45.00	30.00	26.50	.....
Lime	Hyd. Com.	Ton	.....	20.00	26.00	16.00	22.00	20.00	15.75	17.00	16.00	20.00	22.50	.....	16.00	16.50	20.00	17.50	20.00	18.00
Building Sand		Cu. yd.	1.60	2.50	1.50	1.28	.....	3.00	2.00	2.15	4.60	1.00	2.25	2.75	1.50	2.00	2.50	1.75	1.50	3.50
Crushed Stone	¾"	Ton	3.00	2.80	2.50	1.30	.....	3.00	2.45	3.40	4.50	3.00	5.25	2.75	.....	2.40	2.40	.....	3.00	4.00
Window Glass	Single A 10"x12"	50 sq. ft.	.....	4.40	.....	4.20	5.95	.....	5.10	4.40	4.75	6.75	.....	.....	.....	5.40	4.50	4.80	5.00	.....
Hollow Tile	8"x12"x12"	Each	.30	.30	.....	.20	.20	.19	.23	.25	.23	.19	.....	.19	.18	.17	.17	.17	.12	.13
Cast Iron Soil Pipe	4" E.H. 13 lbs. per ft.	Ton	.....	65.00	.....	58.80	68.00	.....	82.60	90.00	85.00	.....	.....	.....	53.00	52.00	50.00	52.00	52.00	.....
Steel Pipe	1" galv.	100 ft.	.....	15.00	.....	10.00	9.35	.....	10.10	10.05	10.50	11.46	9.46	.....	9.00	9.25	.....	9.00	10.00	.....
Reinforcement Bars	¾" square	100 lbs.	.....	4.25	.....	.....	3.65	.....	3.40	4.30	3.00	4.25	5.00	3.38	3.50	3.25	5.00	3.50	3.50	3.25
Structural Steel	Fab. 6" I-beams	100 lbs.	4.00	6.00	.....	3.35	3.10	.....	3.50	4.50	5.00	4.25	5.00	.....	4.50	3.75	5.50	4.00	4.80	4.55
Gypsum Plaster	Neat	Ton	.....	26.00	.....	.....	22.00	24.00	21.50	21.00	19.00	21.00	22.50	.....	17.00	18.00	17.00	17.50	16.00	18.00
Roofing Slate	No. 1 Ribbon	100 sq. ft.	.....	.....	.....	.....	13.50	.....	.....	13.50	12.75	.....	20.00	.....	17.00	16.50	.....	16.50	16.00	.....
Tar Paper Roofing	2-ply 75 lbs. per roll of	100 sq. ft.	.....	2.50	.....	2.00	1.95	.....	2.75	.....	.....	.....	1.90	.....	2.75	2.80	2.25	3.00	3.00	.....
Rosin Sized Sheathing	3-ply 30 lbs. per roll of	500 sq. ft.	.....	1.75	2.00	1.55	1.35	1.30	1.25	.....	1.25	.....	.....	.....	1.00	1.00	1.50	1.00	1.50	1.35

			Missouri		Ohio					La.		Texas	Ariz.	Wash.	N. D.	S. D.	N. J.	Fla.	Calif.	
Commodity	Size or Condition	Unit	St. Louis	Kansas City	Cleveland	Akron	Toledo	Dayton	Lorain	New Orleans	Shreveport	San Antonio	Tucson	Spokane	Grand Forks	Sioux Falls	Newark	St. Petersburg	San Jose	Sacramento
Common Brick		1,000	$17.50	$16.50	$16.00	$16.00	.....	$17.00	$23.00	$13.50	$13.50	$14.00	$15.00	$13.00	$15.00	$18.00	$19.00	$19.00	$16.00	$17.00
Portland Cement	Excl. of containers	Bbl.	2.85	2.45	3.40	.....	$3.68	3.52	.....	3.40	3.20	2.80	4.28	.....	4.00	.....	3.50	3.80	3.20	3.55
Yellow Pine No. 1	Dimension 2x4-16' S1S1E	M.	47.00	54.00	59.00	50.00	51.00	45.00	55.00	47.00	48.00	60.00	65.00	.....	.....	.....	47.50	55.00	.....	.....
Douglas Fir No. 1	Dimension 2x4-16' S1S1E	M.	46.50	54.00	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	50.00	51.50	.....	.....	36.00	44.00
N. Carolina Pine No. 1	Dimension 2x4-16' S1S1E	M.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	55.00	.....	.....
Common Boards No. 1	1x6	M.	51.50	60.00	51.00	50.00	.....	.....	50.00	.....	41.00	66.00	60.00	27.00	50.00	46.00	47.00	55.00	.....	45.50
Y. P. Flooring E. G. "C"	1x4-10'-16'	M.	85.50	95.00	98.00	95.00	82.00	90.00	105.00	82.00	100.00	120.00	97.50	.....	.....	.....	95.00	110.00	.....	.....
Douglas Fir V. G. No. 2	1x4-10'-16'	M.	.....	115.00	.....	.....	.....	.....	.....	.....	.....	.....	.....	70.00	95.00	83.00	.....	.....	.....	82.00
Red Cedar Shingles	Extra clear 16" 5 to 2	100 sq. ft.	6.58	6.50	6.00	6.00	6.20	5.20	6.40	.....	6.30	6.80	.....	.....	6.00	5.60	6.00	.....	.....	5.85
Cypress Shingles	Extra clear 16" 5 to 2	100 sq. ft.	.....	.....	.....	.....	.....	.....	.....	.....	7.20	.....	7.00	.....	.....	.....	.....	.....	.....	.....
Composition Shingles	Crushed slate surfaced	100 sq. ft.	6.15	6.00	6.25	.....	6.75	6.00	.....	.....	6.75	9.00	.....	.....	8.00	7.50	6.50	7.50	.....	.....
Gypsum Plaster Board	⅜"	1,000 sq. ft.	44.00	32.00	32.00	27.60	.....	32.50	.....	45.00	45.00	50.00	55.00	.....	65.00	32.00	45.00	.....	.....	41.50
Lime	Hyd. Com.	Ton	20.00	25.60	16.80	18.80	20.00	.....	.....	16.00	30.00	20.00	.....	.....	.....	22.50	17.00	32.00	20.00	.....
Building Sand		Cu. yd.	2.60	2.50	2.50	2.00	3.03	1.80	2.50	2.00	2.00	2.50	1.15	1.00	3.00	1.25	2.75	4.50	3.00	1.50
Crushed Stone	¾"	Ton	.....	2.60	3.50	3.25	3.00	2.50	2.40	.....	4.12	2.00	3.00	.....	.....	2.50	.....	6.25	2.30	2.75
Window Glass	Single A 10"x12"	50 sq. ft.	4.50	4.50	4.50	5.40	.....	4.50	.....	4.50	7.20	4.80	.....	.....	.....	.....	4.75	.....	.....	4.64
Hollow Tile	8"x12"x12"	Each	.....	.22	.17	.19	.....	.18	.19	.23	.25	.23	.18	.....	.15	.17	.18	.23	.16	.....
Cast Iron Soil Pipe	4" E.H. 13 lbs. per ft.	Ton	.....	.....	.....	92.00	.....	70.00	.....	84.85	90.86	93.00	.....	116.00	91.20	.....	70.00	.....	.....	100.10
Steel Pipe	1" galv.	100 ft.	.....	.....	10.70	10.71	.....	9.00	.....	10.37	11.52	10.73	12.65	12.83	10.50	.....	9.00	.....	.....	11.30
Reinforcement Bars	¾" square	100 lbs.	.....	.....	.....	3.75	.....	3.25	4.00	4.25	3.75	3.75	5.00	.....	5.70	.....	3.25	6.00	3.45	4.00
Structural Steel	Fab. 6" I-beams	100 lbs.	4.88	.....	.....	3.50	.....	.....	3.80	.....	5.00	4.50	.....	.....	5.70	.....	.....	.....	5.75	4.80
Gypsum Plaster	Neat	Ton	18.00	.....	21.00	19.00	.....	19.00	18.00	.....	24.00	21.00	23.00	19.00	27.00	20.00	19.00	23.00	22.00	.....
Roofing Slate	No. 1 Ribbon	100 sq. ft.	.....	.....	.....	12.00	.....	13.50	.....	.....	.....	17.60	.....	.....	.....	.....	13.50	.....	.....	.....
Tar Paper Roofing	2-ply 75 lbs. per roll of	100 sq. ft.	.....	.....	2.50	2.80	.....	2.25	.....	2.55	3.50	1.90	3.00	2.82	.....	2.70	2.25	.....	2.00	.....
Rosin Sized Sheathing	3-ply 30 lbs. per roll of	500 sq. ft.	1.20	1.20	.90	.95	.....	1.00	.....	1.60	1.25	1.40	1.50	1.07	1.75	1.30	1.00	.....	1.90	.....

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Consulting Heating and Ventilating Engineer

Member of firm of Griggs & Myers, New York. Widely experienced in the field of heating and ventilating design for office buildings, institutions and industrials; specialist on investigation and report work on mechanical equipment for new and old plants.

ELECTRICAL SCIENCE

WILLIAM L. GOODWIN
Assistant to the President and in charge of activities of the Society for Electrical Development

This Society is organized to promote accurate knowledge of the practical application of electricity. Its activities extend from the simple problems of household equipment to highly developed electrical plants. Particular attention is given the development of provision for electrical service in buildings.

SAFETY ENGINEERING

S. J. WILLIAMS
Secretary and Chief Engineer, National Safety Council, Chicago

Safety engineering is an important factor in the design of buildings where large groups of people congregate. The National Safety Council has investigated construction and devices with the greatest minuteness.

FARM SCIENCE

FREDERICK WALTER IVES, B.S., M.E.

Professor and Head of Department of Agricultural Engineering, Ohio State University. Consulting Agricultural Engineer, Columbus, Ohio.

Specialist in land drainage, soil improvement, surveys, farm arrangement for economical production, purchase of equipment and economical layout of farm buildings with special reference to interior arrangement.

Address inquiries to committee members, care THE ARCHITECTURAL FORUM, 103 Park avenue, New York

THE FORUM DIGEST

A SURVEY OF IMPORTANT CURRENT ARTICLES ON BUILDING ECONOMICS AND BUSINESS CONDITIONS AFFECTING CONSTRUCTION

The Editors of this Department select from a wide range of publications matter of definite interest to Architects which would otherwise be available only through laborious effort

STANDARDIZATION IN THE BUILDING TRADES

ARCHITECTS will find it of considerable interest to investigate the activities of the American Engineering Standards Committee, of 29 West 39th street, New York. The 1923 Year Book of this committee which has just been received shows that considerable progress was made last year in standardization projects affecting civil engineering and the building trades. Of the 35 standards thus far approved by the A. E. S. C. these seven are of special interest to the building trades and the engineering professions:

- Specifications and Tests for Portland Cement.
- Specifications for Fire Tests of Materials and Construction.
- Standard Test for Toughness of Rock.
- Specifications for Drain Tile.
- Code of Lighting Factories, Mills and Other Working Places.
- Standard Method for Distillation of Bituminous Materials Suitable for Road Treatment.
- Method of Test for Penetration of Bituminous Materials.

The report shows that at the end of the year 121 industrial standardization projects were definitely under way or had been completed and the standards approved. Twenty of these projects have to do with civil engineering and the building trades. Two hundred and seventy-five national bodies, technical, industrial and governmental, including the American Institute of Architects, the American Society of Civil Engineers, and the American Society for Testing Materials, are co-operating in the work of the A. E. S. C. through officially accredited representatives, and more than 900 individuals are serving on the sectional committees which carry on the actual standardization work, the A. E. S. C. acting only as an administrative body.

One of the most important accomplishments of the year was the development of a plan of co-operation between the Federal Specifications Board (the body which develops the specifications for all government purchases) and the A. E. S. C., by which the specifications of the board are submitted informally to the A. E. S. C. before definite adoption. Through this plan the government receives the criticisms of industry through the organizations which speak for those branches of industry that are concerned with any particular standard. Among the specifications which have already been submitted to the A. E. S. C. under this new co-operative arrangement are those for wood screws and hose for various industrial purposes. Dr. A. S. McAllister, who has been serving as a special liaison officer of the Bureau of Standards, has been designated by the chairman of the Federal Specifications Board as liaison representative in the co-operative work with the A. E. S. C.

A standardization project which has just been initiated under the auspices of the A. E. S. C., and which is of special interest to the building trades, is the standardization of methods of testing wood, for which the United States Forest Service and the American Society for Testing Materials have been appointed joint sponsors.

The other civil engineering and building trades projects which have an official status before the American Engineering Standards Committee are:

- Structural steel shapes.
- Safety code for building exits.
- Safety code for construction work.
- Safety code for floor and wall openings, railings and toe boards.
- Identifications of piping systems.
- Safety code for ladders.
- Elevators.
- Methods of testing wood.
- Safety code for elevators and escalators.
- Method of test for unit weight of aggregate for concrete.
- Method of test for voids in fine aggregate for concrete.
- Method of test for organic impurities in sands for concrete.
- Specifications for cast iron pipe and special castings.

How the Work of the A. E. S. C. Is Carried On

The American Engineering Standards Committee essays to serve as a national clearing house for engineering and industrial standardization, to act as the official channel of co-operation in international standardization, and to provide an information service on engineering and industrial standardization matters. The ultimate responsibility for and control of the work rests with the organizations whose representatives constitute the A. E. S. C. The process of industrial standardization may be conveniently divided into four stages, namely: (1) standardization by individual firms; (2) by societies and associations; (3) on a national scale; (4) on an international scale. The A. E. S. C. is primarily concerned with the last two stages. It is the agency through which industrial standardization in this country is passing from the second to the third stage, namely, from standardization by associations, societies and governmental agencies, to standardization on a national scale. Through its method and procedure, which are the result of extensive study and discussion on the part of numerous bodies concerned, and which have been further developed through three years of experience, the standardization work of the many bodies concerned is being broadened and unified into a system of national industrial standards.

The A. E. S. C. method is simply a systematic plan of co-operation by which all organizations interested in any particular standardization project participate (1) in deciding whether the work shall be undertaken at all, (2) in formulating the standardization, and (3) in its ultimate approval as an "American standard" or a "tentative American standard."

The formulation of each standard, including all detailed work and technical decisions, is in the hands of a working committee, called the "sectional committee." This committee is made up of representatives designated by the various bodies interested in the particular project in hand. Each sectional committee is organized by, and under the leadership of, one or more of the principal bodies interested. Such bodies are known as "sponsors." This plan makes the committee the most decentralized of all the national standardization bodies.

After the standard has been formulated and agreement upon it is reached in the sectional committee, it is submitted through the sponsor to the main committee for approval. In acting on the approval of standards as "American standards" or "tentative American standards," the main committee considers the adequacy of representation on the sectional committee of the various interests and the procedure which has been followed, but it does not concern itself with the technical details of the standard. Hence approval by the A. E. S. C. means, not that the main committee has itself worked over and passed upon the technical details of the standard, but that it has satisfied itself that all organizations concerned have had an opportunity to participate in the work, that the work has been carried out under a procedure that has been regular, open, and above board, and that the standard represents a real national consensus on what is best in American engineering and industrial practice, and hence that it either already does or may reasonably be expected to play a significant, if not a controlling, role in the processes and materials in the industry concerned.

BUILDING IN NEW ENGLAND

THIS interesting review and analysis of building activity in New England over a long period of years was recently presented in the monthly review of the Federal Reserve Bank of Boston. It provides interesting statistical data together with graphic charts which provide a basis for comparison of building costs at various periods during recent years.

"After the period of intense depression in the building industry of New England in the spring of 1921, new construction expanded at an increasingly rapid rate as confidence in the stability of building costs was gradually restored, until early in 1922 activity in the building trades had reached boom proportions. As a leader with great fundamental strength, it, to a considerable extent, paved the way for the subsequent general recovery in business.

"Chart 1 immediately below reflects the yearly value of contracts awarded in New England as reported by the F. W. Dodge Co., from 1901 onward; the solid line in the same chart indicates value of volume corrected for changes in building costs during this period, because a certain value of new construction undertaken at present, for example, equals hardly more than half as many actual buildings as a similar amount would have in 1913. Through this corrected index of construction a line of trend for the full period covered from 1901 through 1922 has been drawn, to indicate the degree of over-expansion or contraction in building construction which has taken place since the beginning of the century.

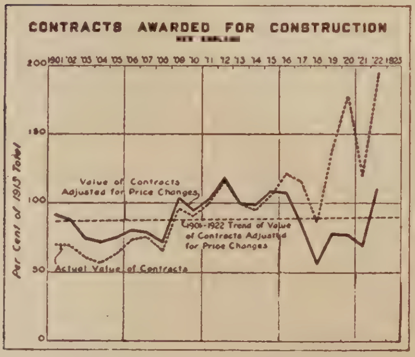

Chart 1. Yearly value of building contracts in New England from 1901 to present

"The 5 years following 1902 were poor years for building. Both 1903 and 1904 were years of generally depressed business, and the latter part of 1907 was characterized by a severe financial stringency. From 1908 through 1916 construction was at a relatively high rate, the peak coming in 1912. Following the entry of the United States into the European struggle, in the spring of 1917, new construction of buildings for public uses, and particularly of residences and apartments, was neglected to such an extent that total contracts awarded for 1918 amounted to scarcely two-thirds of a normal year's requirements. Essential industrial and business construction, however, was better maintained. The trend of building costs, which in 1916 had begun to rise sharply, now became more pronounced, and thus, while the value of contracts awarded mounted rapidly through 1919 and 1920, the actual volume of construction increased scarcely at all. This movement in costs culminated in the early summer of 1920, and was followed by the most drastic decline that had been witnessed since 1864. New construction in 1921 was about 78 per cent of normal.

"In explanation it may be said that the 1901–1922 line of trend has been considered more representative than any other,—than, for example, that from 1901 through 1916. Should the latter be correct, it would mean that as a result of the war New England at present faces a cumulative shortage of over a year and a half's construction at the 1922 rate of building, and that the average 1922 rate was scarcely above normal. However, if the former gives the true analysis of the situation, it would indicate that while there has been an extreme shortage of residences, and to a lesser degree of buildings for public, educational and philanthropic purposes, this, at least, has been no more serious than during the period from 1903 through 1908.

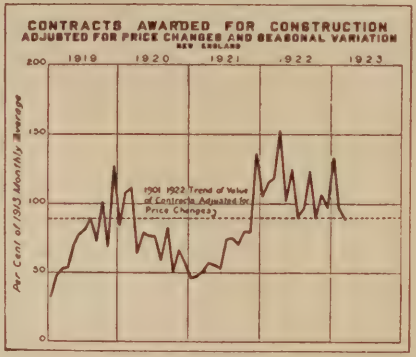

Chart 2. Amount of new construction in New England since the armistice in 1918

"Chart 2 shows the amount of new construction in New England undertaken monthly since the period of greatest depression, immediately after the armistice in 1918. In addition to correcting for changes in building costs an adjustment has been made for seasonal variation. As a result, the figure for any one month is strictly comparable on a quantity basis with that for any other.

"The normal seasonal movement used, which was for the 22-year period from 1901 through 1922, and in which the monthly average during the year has been considered to be 100, is thus given:

SEASONAL VARIATION OF CONTRACTS AWARDED IN NEW ENGLAND
1901–1922

January	63.0
February	56.2
March	98.4
April	121.6
May	133.0
June	122.8
July	113.2
August	113.7
September	93.9
October	110.7
November	93.5
December	80.0

"It will be readily seen from Chart 2 that for the 9 months from October, 1920, through June, 1921, new construction undertaken in New England was scarcely half as large as would normally have been required during this period. Beginning with July, 1921, however, new building increased rapidly, until in April, 1922, it was 50 per cent above normal, but has since declined. It should be understood clearly that while in the spring of 1922 New England building contractors were operating at a much higher rate than those in the middle western and western states, the building boom has since moved westward and the greatest construction activity is now in the Pittsburgh, central western and northwestern districts. For example, in February, whereas the actual value of contracts awarded in New England was 6 per cent less than in February, 1922, that of contracts in the Chicago district was 64 per cent greater, in the Pittsburgh district 76 per cent, and in the Minneapolis district 113 per cent.

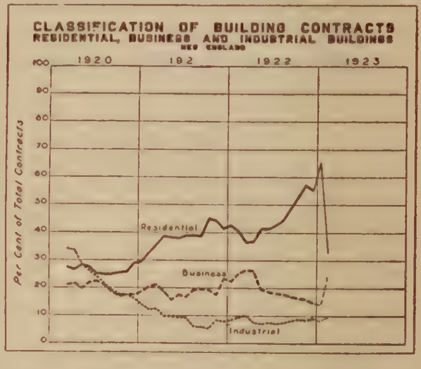

Chart 3. Relative amounts of New England construction in three major building classifications

"Chart 3, which carries a 5 months, average of various classes of construction, indicates the percentage that these types have formed of the total in New England during the last three years. This clearly shows that residential building was undoubtedly the backbone of the building programs of 1921 and 1922, particularly in the latter months of 1922. Industrial construction, however, since the middle of 1921, as a reaction from over-expansion in 1919 and 1920, has been less than 10 per cent of the total.

"In December the value of residential contracts awarded in New England formed 71 per cent of all building contracts, but in February it declined to approximately 33 per cent. That of business buildings, the next largest item, increased from 11 per cent in December to 24 per cent in February.

"The more immediate building situation in New England, therefore, hinges on the possibility that the acute deficit of 1920 in residential construction has not yet been met and, accordingly, that residential construction can be maintained at approximately the same rate as in the latter part of 1922, or that any decline here may be offset by gains in other lines; and both this and the long-time outlook, in turn, are dependent upon the attitude of prospective build-

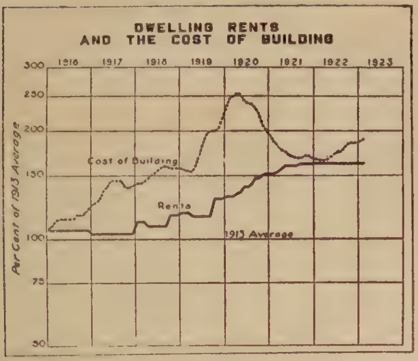

Chart 4. Cost of building in New England compared with rentals in same period

ers toward the building price structure and the probable investment value of new construction both at present and over a term of years. Chart 4 compares the cost of building with an index of the dwelling rents in Massachusetts."

GOVERNMENT ANALYSIS OF THE BUILDING SITUATION

AFTER an examination of all available reports on the building situation, several government departments have decided to curtail activity in the construction of government buildings. This statement is a summary of the survey made on the date of March 16, 1923:

The extensive data submitted with this memorandum show that the capacity of the construction industry in the next few months at least will be fully utilized by the demands for private construction and the work of state and local governments already under contract or critically necessary for maintenance.

The volume of construction carried out in 1922 is indicated by these figures on building materials:

(Index numbers based on 1913 activity as 100)

	1922	1921	1920	1919
Lumber production	103	80	94	94
Cement production	124	107	109	87
Fabricated steel sales	168	87	130	125

Lumber production in 1922 was above any year in the past decade, while fabricated steel sales were 16 per cent over those for 1916, the highest previous year. Cement shipments were greater than production, and were 20 per cent higher than in 1920, the previous record year.

Contracts awarded for construction work in 1922, compared with the three previous years, are shown by these index numbers, based on 1919 figures as 100:

	1922	1921	1920	1919
Total value	130	91	98	100
Total floor space	102	69	72	100

Actual building activity in 1922 in relation to 1919 was greater than the figures on contracts awarded show. A large amount of building contracted for in the last months of 1921 was carried over into 1922, whereas there was practically no such carry-over into 1919. There was practically full employment of labor during 1922, and an actual shortage of labor in many localities.

Price levels of construction materials advanced during the year as shown by these index numbers:

Year and month	Frame house materials	Brick house materials	Wholesale prices
1922			
January	174	179	157
February	169	174	156
March	169	173	155
April	168	172	156
May	173	176	160
June	178	181	167
July	181	184	170
August	189	193	172
September	193	197	180
October	196	199	183
November	196	201	185
December	192	198	185
1923			
January	195	199	188
February	198	201	192
Per cent of increase February, 1923, over February, 1922	17	16	23

At the end of the year stocks of building materials were greatly reduced. Since the beginning of this year building activities have materially increased over those of a year ago, as shown by this index of contracts awarded for January and February:

	Feb., 1923	Jan., 1923	Feb., 1922	Jan., 1922
Total value	107	101	83	77
Total square feet	89	83	64	65
Residential value	143	158	107	107
Residential, sq. ft.	112	122	82	90

(Index numbers, 1919=100)

Actual totals in dollars for 27 northeastern states are:

	Jan. and Feb., 1923	Jan. and Feb., 1922
Total value	$447,271,000	$343,685,110
Total square feet	80,558,400	60,321,300
Residential, value	212,769,900	151,431,800
Residential, sq. ft.	47,253,300	34,568,800

(Index numbers, 1919=100)

The limiting physical factors in the amount of construction to be undertaken in the future are labor, materials, and transportation. It may be said generally that labor is in full employment at the present time, and the increase in construction demand during the spring months on the basis of contracts already let indicates even increased shortages over those now existing. Considerable numbers of material manufacturers are running at full capacity, and where production capacity is under-employed at the present time it is largely due to shortage of labor.

Advance orders are greatly in excess of those a year ago. Combined figures of seven large lumber associations show an increase of 49 per cent in orders received during the first 9 weeks in the year over the same period in 1922. Unfilled steel orders of the largest company were 71 per cent greater at the end of February than a year before. Sales of fabricated steel for the first 2 months of 1923 were 85 per cent above the same period in 1922. January orders for sanitary pottery made a new high record for all time. Trade reports for other commodities not covered by adequate statistics indicate similar tendencies.

The transportation situation is indicated by the car shortage during the last few months:

Car Shortages at End of Month

	1922	1921
December	82,927	110
	1923	1922
January	73,269	642
February	80,633	599

From this it would appear that the building and construction necessities of the country are being taken care of as far as labor, material manufacturing, and transportation facilities permit, and that the prosecution of governmental projects at the present time would not add to the production of materials or to the amount of employment in the country, but would in fact mean simply displacement of construction that could be undertaken at private hands.

VALUABLE LUMBER REFERENCE DATA

AN announcement has recently been made that the National Lumber Manufacturers' Association has over a period of years been issuing separate publications which have been cordially received by architects, engineers, builders, educational authorities and others. They have been given gratifying recognition as documents prepared with care to encourage the most appropriate utilization of forest products. The numerous suggestions and valuable support received have assisted largely in establishing the association and its publications as important factors in furnishing basic information on lumber and its uses and have led to the inauguration of increased service and a new and more comprehensive series of publications.

In appreciation of the co-operation of professional and technical associations, governmental departments, educational institutions, and progressive individuals throughout the country, and in response to the established need for complete reference data from the tree to the finished structure, the National Lumber Manufacturers' Association, through its technical and research department, in collaboration with the Structural Service Bureau of Philadelphia, is outlining a comprehensive series of publications under the title, "Lumber and its Utilization." Included in the purpose of the series will be the promulgation of data which, through fullest co-operation, it is hoped will result in establishing desirable basic standards with respect to the uses of lumber in all types of construction.

Authoritative information, effecting more practical, economical and lasting uses of building materials, is essential to real progress. The united effort of producers, designers, distributors and users is necessary to the accomplishment of this definite purpose. It is desired, therefore, to make this, as far as possible, a co-operative service. In anticipation of an increase in the interest previously manifested, the association requests and will appreciate suggestions as to subjects and methods of their treatment in order that such information as is issued may be most beneficial to all concerned. Pending the completion of the respective series, requests for copies and inquiries concerning the most appropriate and economical use of available woods in various types of construction may be addressed to the National Lumber Manufacturers' Association, Washington.

STATISTICAL FACTS ON THE BUILDING TRADES

THERE has recently been presented in the *Manufacturers' Record* a most interesting analysis of the discouragements and difficulties which face the young man who wishes to enter the building trades. This was read by J. B. Landers, Manager of the Builders' Exchange of Oklahoma City, and was presented at the annual meeting of the National Association of Builders' Exchanges. According to Mr. Landers:

"Forty-eight organizations which are members of the National Association of Builders' Exchanges, representing cities from all sections of the United States, reporting wage scales in the building trades in January and December, 1922, show an average in 10 trades, to be:

	Average wage scale January 1922	December 1922
Carpenters	.87¾	.87¾
Electricians	.92½	.94
Painters and paper hangers	.84⅛	.84⅛
Plasterers	1.06	1.14
Masons, brick and stone	1.07½	1.16
Plumbers	1.01	1.01
Sheet metal workers	.90	.90
Structural steel	.96	.97
Roofers	.84½	.86
Hodcarriers	.61	.66

"The average wage scales from rates reported through private investigation by 131 cities, from all states in the union, and representing cities of all classes, as of December, 1922, are:

Carpenters	.91
Electricians	.93½
Painters and paper hangers	.88
Plasterers	1.06
Masons, brick and stone	1.16
Plumbers	1.03
Sheet metal workers	.90
Structural steel	..
Roofers	..
Hodcarriers	.60

"The year has shown a gradual upward tendency. In some localities little or no regard has been paid to the prevailing wage scales. In some instances mechanics are drawing as much as 50 per cent to 75 per cent above the scale, due to the rapidly increasing shortage of mechanics as shown by this table, based on the U. S. census of 1920:

COMPARATIVE STATEMENT OF PERSONS ENGAGED IN TEN CRAFTS IN THE BUILDING TRADES FROM 1910 TO 1920

	1910	1920	1922	Decrease in 12 years	Average decrease per year
Brick and stone masons	169,402	131,264	123,638	45,764	3,813
Apprentices	2,503	1,434	1,222	1,381	...
Note: The number of apprentices annually entering this trade decreased over a like period, 1381, leaving only 1222 mechanics to take the place of 3813—which condition will become more acute with the aging of the craftsmen at present engaged, while the number of apprentices grows less.					
Painters	273,442	248,497	243,509	29,932	2,494
Apprentices	2,662	1,616	1,408	...	...
Annual loss to craft				2,494	
Apprentices				1,408	
Annual net loss				1,086	
Paper hangers	25,577	18,646	17,380	8,197	683
Apprentices	444	172	118	..	...
Annual loss to craft				683	
Apprentices				118	
Annual net loss				565	
Plasterers	47,682	38,255	36,371	11,311	942
Apprentices	699	398	344	...	...
Annual loss to craft				942	
Apprentices				344	
Annual net loss				598	
Roofers and slaters	14,078	11,378	10,838	3,240	253
Apprentices	304	250	240	...	...
Annual loss to craft				253	
Apprentices				240	
Annual net loss				13	

All 1922 figures estimated at proportionate rate of decrease for ten-year period between 1910–1920

"Four trades of the 10 concerned show an increase in the number of persons engaged, with the number of apprentices decreasing, with one exception. The electricians show an increase in the number entering the trade. 1922 figures estimated at proportionate rate of increase and decrease for the 10-year period from 1910 to 1920 are:

	1910	1920	1922	Increase in 12 years
Carpenters	817,120	887,379	901,429	84,309
Electricians	120,241	212,964	231,508	111,267
Plumbers	148,304	206,718	218,300	69,996
Structural iron workers	11,427	18,836	20,316	8,889
Tinsmiths and sheet metal workers	56,423	69,735	72,397	15,974
Carpenter apprentices	6,069	4,805	4,553	*1,516
Plumber apprentices	9,903	7,386	6,884	*3,019
Electrician apprentices	2,661	9,562	10,982	8,322

*Decrease.

Note: Authentic figures on sheet metal and structural iron worker apprentices not available.

Making Building Impractical

"Generally speaking, the year 1922 witnessed an acute situation, and in numbers of instances the situation has become serious. With the depletion in the ranks of mechanics increasing at a rapid rate, and with far too few apprentices entering the trades to fill the places of those dropping out because of age and other reasons, we have witnessed more than usual the unreasonable demands upon those engaged in the industry.

"The decrease of men engaged in these trades is attributable to various reasons, chief among which are the apprentice rules of the unions. We find apprenticeship limited, more or less, in every craft in the building industry, and in some cases where apprentices are engaged, the older men are not taking an interest in the apprentice or assisting in his mastery of his chosen occupation.

"From a careful survey of the public schools and from personal interviews with students leaving high school, it is evident that the American youth of today has no inclination to enter into the trades under the requirements demanded of him in most localities—that he obligate himself to abide by arbitrary rulings and subject himself to fines and dues for the privilege of selecting and following the trade or occupation of his personal choice. In this connection it is a fact that to a greater or less extent, in some localities, contractors actively engaged in the industry are aiding in maintaining and in some instances going out of the way to secure an opportunity to enter into agreements with labor leaders and organizations which are gradually depleting the ranks of skilled mechanics to such an alarming extent that if the present rate of decrease of skilled mechanics is continued, in a few years the cost of building operations will be so great that it will be impossible for the man of moderate means to build himself a home in which to live.

"It is to be deplored that we have contractors today engaged in the industry who, from all indications, are using the labor organizations for the purpose of driving out competition through private and individual agreements with the labor organizers whose strength depends upon the scarcity of mechanics. The American public and the legitimate interest of the building industry condemn this method of operation.

"There are only two ways to produce or secure men. One is through the channels of immigration,—the other, train the youth of today. We have tried immigration, and it has flooded the country with foreigners who are susceptible to the arguments of the agitator and peace disturber. It is not best that we tear down the barrier and permit an influx of more of the same element while we sit idly by and neglect to give the youth of the land a chance. We have never taken the proper interest in the high school boy, or the boy who cannot go on through high school but who is forced to discontinue with or before the completion of the grammar grades. We have permitted the labor leader and the agitator to say who shall learn a trade. We have forgotten to look to tomorrow. We have seen good American boys turned loose on the streets when we could have guided them in the right direction. It is true that some have succeeded unassisted, but of those who have not, had they been properly looked after and given the opportunity of a choice of occupation in the building trades, how many more could have become respected, self-reliant men and a benefit to humanity, instead of going through life untrained, unskilled, and without sufficient knowledge of any trade or occupation to provide for the future and old age?

"We owe it to the industry to see that the present and coming generations are given the opportunity to enter the trades without restrictions or limitations. In localities where proper interest in these matters is being displayed and where every man is permitted to work and earn the highest wage according to his ability, they do not feel the existing shortage or have the disturbances to the extent that localities do where opposite conditions prevail."

Selected List of Manufacturers' Literature

FOR THE SERVICE OF ARCHITECTS, ENGINEERS, DECORATORS, AND CONTRACTORS

The publications listed in these columns are the most important of those issued by leading manufacturers identified with the building industry. They may be had without charge, unless otherwise noted, by applying on your business stationery to *The Architectural Forum,* 142 Berkeley St., Boston, Mass., or the manufacturer direct, in which case kindly mention this publication.

Listings in this Department are available to any manufacturer at the rate of $5 per listing per month.

ACOUSTICS

Johns-Manville, Inc., Madison Ave. & 41st St., New York, N. Y.
Architectural Acoustics. Booklet. 6 x 9 in. 24 pp. Illustrated. Treatise on the correction of architectural acoustics in churches, schools, hospitals, office buildings and other places.

ASH HOISTS—ELECTRIC AND HAND POWER

Gillis & Geoghegan, 544 West Broadway, New York, N. Y.
General Catalog. 8½ x 11 in. 20 pp. Fully illustrated. Contains specifications in two forms (with manufacturer's name and without) Detail ¼" scale for each telescopic model and special material-handling section.
The Man-Saving Load Lifter. 5⅞ x 8⅞ in. 8 pp. Illustrated. Describes G&G Telescopic and Non-Telescopic Hoists for handling material in factories.

BATHROOM ACCESSORIES

The Fairfacts Company, 234 West 14th St., New York, N. Y.
Catalog F. 4 x 9 in. 12 pp. Illustrated. Describes full line of china fittings for bathrooms.
The Perfect Bathroom. Booklet. 4 x 9 in. 12 pp. Illustrated. Shows full line, Biltin and Projecting Types, installed. For architects and clients.

BOILERS—See Heating Equipment

BRICK

American Face Brick Association, 1751 Peoples Life Bldg., Chicago, Ill.
The Story of Brick. Third Edition. Booklet 7 x 9¼ in. 55 pp. Illustrated. Presents the merits of face brick from structural and artistic standpoints. Tables of comparative costs.
The Home of Beauty. Fourth Edition. Book. 8 x 10 in. 72 pp Color plates. Presents fifty designs for small face brick houses submitted in national competition by architects. Text by Aymar Embury II. Architect. Price 50c.
Bungalow and Small House Plans. Booklets. 8½ x 11 in. 50 pp Illustrated. Four booklets, showing a variety of designs for small face-brick houses, covering 3, 4, 5, 6, 7 and 8 room houses. Price, 25c. each, $1 for the set.
A Manual of Face-Brick Construction. Booklet. 8½ x 11 in. Text-book on construction of the brick wall and various uses of face brick 31 colored plates of brick houses with plans. Price, $1.00.
Architectural Details in Brickwork. Series 1, 2, 3. 8½ x 11 in. Very useful to the architect or draftsman. Sent free to architects applying on their office stationery. To others, $1.50.

B. Mifflin Hood Brick Co., Atlanta, Ga.
Burned Clay Products. Booklet. 9½ x 12½ in. 47 pp. Illustrated. Shows different uses of brick, but presents particularly the various uses of quarrie floor tile. Free to architects and engineers.

BUILDING FINANCE

S. W. Straus & Co., 565 Fifth Ave., New York, N. Y.
The Straus Plan of Financing. Booklet. 8 x 6 in. 24 pp. Illustrated Describes Straus system of co-operation with Architects, Builders, Engineers and Brokers in financing important building operations: also the making of construction loans on the larger and better properties in our large cities.
Forty-one Years Without Loss to Any Investor. Booklet. 8 x 5 in. 38 pp. Illustrated. A carefully prepared booklet for the thinking investor. Describes Straus bonds, the property upon which loans are made, and explains the Straus plan of safeguards which made possible the 41-year record.

BUILDING STONE—See Stone, Building

BUILDINGS, STANDARD STEEL

Truscon Steel Company, 250 W. Lafayette Bldv., Detroit, Mich.
Truscon Standard Buildings. Catalog. 8½ x 11 in. 48 pp. Contains data and illustrations.

BUILDINGS, STEEL PRODUCTS FOR

Truscon Steel Company, 250 W. Lafayette Blvd., Detroit, Mich.
Truscon Data Book. Catalog. 3½ x 6 in. 128 pp. Illustrated. Contains complete information with illustrations on Truscon reinforcing steel, steel windows, metal lath, standard buildings, concrete inserts, steel joists, pressed steel stampings and chemical products.

CEILINGS, SUSPENDED

United States Gypsum Company, 205 West Monroe St., Chicago, Ill.
Jester-Sackett System of Partitions and Ceilings. Booklet. 8½ x 11 in. 24 pp. Illustrated. Contains complete architectural data.

CEMENT

Carney Company, The, Mankato, Minn. Booklet. 8 x 10 in. 24 pp. Illustrated. Complete information on product, showing prominent buildings in which this cement has been used

Louisville Cement Co., 315 Guthrie St., Louisville, Ky.
Brixment. Booklet. 7½ x 5 in. 16 pp. Illustrated. Brixment, what it is, what it does, how it does it and why.

Sandusky Cement Co., Dept. F, Cleveland, Ohio.
Medusa White Portland Cement, Stainless. Booklet. 8½ x 11 in. 48 pp. Illustrated.
Medusa Waterproof White Portland Cement. Booklet 6 x 9 in. 32 pp. Illustrated.
Medusa Review. 6 x 9 in. 18 pp. Illustrated House organ issued bi-monthly.

CONDUIT

National Metal Molding Co., 1113 Fulton Building, Pittsburgh, Pa.
Bulletin of all National Metal Molding Products. In correspondence folder. 9½ x 11½ in.
Sherarduct. Circular. 5 x 8 in Illustrated.
Flexsteel. Circular. 5 x 8 in. Illustrated.

CONSTRUCTION, FIREPROOF

National Fire Proofing Co., 250 Federal St., Pittsburgh, Pa.
Standard Fire Proofing Bulletin 171. 8½ x 11 in. 32 pp. Illustrated. A treatise on fire proof floor construction.

Northwestern Expanded Metal Co., 934 Old Colony Building, Chicago, Ill.
Fireproof Construction. Catalog 6 x 9 in. 72 pp. Illustrated. Handbook of practical suggestions for architects and contractors. Describing Nemco Expanded Metal Lath.
Fireproof Construction. Handbook. 6 x 9 in. 72 pp. Illustrated. Describing Kno-Burn expanded metal lath.

DAMPPROOFING

Sonneborn Sons, Inc., L., 116 Fifth Ave., New York.
Specification Sheet. 8½ x 11 inches. Description and specifications of compounds for dampproofing interior and exterior surfaces.

DECORATIVE TILES

The Rookwood Pottery Company, Cincinnati, Ohio.
Halftone reproductions and photographic prints showing various tile treatments. 9½ x 11½ in.

DOORS AND TRIM, METAL

The American Brass Company, Waterbury, Conn.
Illustrated pamphlet describing use and adaptability of Extruded Architectural Bronze Shapes for metal window frames, doors, grilles, counter screens, etc.

Dahlstrom Metallic Door Company, 425 Buffalo Street, Jamestown. N. Y.
Architectural Catalog. 10 x 14 in. 46 pp. 11 sections. Illustrated. Catalog showing our regular styles and types of hollow metal doors and interior trim. Various types of frames and other architectural shapes also illustrated.
Architectural Portfolio. 14 x 18 in. 30 pp. Illustrated. Portfolio of various designs and types of Dahlstrom doors. Drawings and details of each style or type. This is only sent free to reliable architects

The Compound & Pyrono Door Company, St. Joseph, Mich.
Pyrono Handbook for Architects and Contractors. 8½ x 11 in. 16 pp. Contains full information regarding Pyrono Fireproof Veneered Doors and Trim, with complete details and specifications.
Pyrono details in sheet form for tracing.

Richards-Wilcox Mfg. Co., Aurora, Ill.
Fire Doors and Hardware. Booklet. 8½ x 11 in. 64 pp. Illustrated. Describes entire line of tin-clad and corrugated fire-doors, complete with automatic closers, track hangers and all the latest equipment—all approved and labeled by Underwriters' Laboratories.

The J. G. Wilson Corporation, 8 West 40th St., New York, N. Y.
Rolling Doors and Shutters. Book. 8½ x 11¾ in. 80 pp. Illustrated. A handbook for engineers and architects, showing details, dimensions and photographs of installations.

DRAFTING MATERIALS

American Lead Pencil Company, 220 Fifth Ave., New York, N. Y.
VENUS Pencil in Mechanical Drafting. Booklet C20. 6 x 9 in. 16 pp. Illustrated. Describes the many possibilities of the VENUS for technical drawing.
Catalog. 3¾ x 8¾ in. 25 pp. Illustrated. Describes pencils, holders, erasers, etc.

DUMBWAITERS

Kaestner & Hecht Co., Chicago, Ill.
Bulletin 520. Describes K. & H. Co. electric dumbwaiters. 8 pp.

Sedgwick Machine Works, 151 West 15th Street, New York.
Catalog and Service Sheets. Standard specifications, plans and prices for various types, etc. 4¼ x 8¼ in. 60 pp. Illustrated.

ELECTRICAL EQUIPMENT

Frink, Inc., I. P., 24th Street and 10th Avenue, New York, N. Y.
Catalog 415. 8½ x 11 in. 46 pp Photographs and scaled cross sections. Specialized bank lighting, screen and partition reflectors, double and single desk reflectors and Polaralite Signs.

General Electric Company, Schenectady, N. Y.
Wires and Cables. Booklet. 8 x 10½ in. 85 pp. Illustrated. Four bulletins in a binder, describing wires and cables in general, conductors insulated with vulcanized rubber compound, varnished cambric and paper insulated cables, splicing materials and junction boxes for cable installations, armored cables.
Electric Fans. Folder. 6 pp. 3¼ x 6 in. Illustrated. Describes 1922 line of electric fans, giving catalog numbers, voltages and frequencies.
Reliable Wiring Devices. Catalog. 3 x 4⅝ in. 206 pp. Illustrated. Pocket catalog giving prices, schedule classifications and data for socket receptacles, switches, rosettes, cutouts and fuses for miscellaneous devices.
Lighting of Public Buildings. Bulletin. 6 x 9 in. 25 pp. Illustrated. Describes lighting of galleries, banks, museums, libraries, municipal, county and state buildings.

SELECTED LIST OF MANUFACTURERS' PUBLICATIONS — *Continued from page 71*

ELECTRICAL EQUIPMENT — Continued

Hart & Hegeman Mfg. Co., 342 Capitol Ave., Hartford, Conn.

A new H & H Switch. Leaflet. 3½ x 6 in. 4 pp. Illustrated. Illustrates a new H & H composition base push switch of DeLuxe quality.

Tumbler Switches. Booklet. 3½ x 6 in. 6 pp. Illustrated. Shows complete line of H & H Tumbler Switches.

H & H Elexits. Booklet. 8 x 10¼ in. Illustrated. Shows new complete line of Elexits—places for lights. May be used for Wall Receptacles or Electric Fixtures.

H & H Radio Button Push Switches. Booklet. 3½ x 6 in. Illustrated. Radio Luminous Buttons applied to Push Switches and Sockets.

The Holtzer-Cabot Electric Co., Amory St., Boston 19, Mass.

Signaling Systems for Hospitals. Brochure. 8½ x 11 in. 42 pp. Illustrated. Contains complete data covering Nurse's Call, Doctor's Call, "In" and "Out," Fire Alarm, Watchman's Clock and Telephone Systems.

Signaling Systems for Schools. Brochure. 8½ x 11 in. 47 pp. Illustrated. Contains complete data covering Telephone Systems, Program Bells, Fire-Alarm Systems, Low Tension Power Plant and Laboratory Equipment.

Kohler Co., Kohler, Wis.

Kohler Automatic Power and Light 110 Volt D. C. Booklet. 5 x 7 in. 32 pp. Illustrated. Describes a standard voltage automatic, electric power and light plant for isolated homes.

Simplex Wire & Cable Co., 201 Devonshire Street, Boston, Mass.

Simplex Manual Catalog and reference book. 6¾ x 4¼ in. 92 pp. Contains in addition to information regarding Simplex products, tables and data for the ready reference of architects, electrical engineers and contractors.

Specification No. 2053. For Simcore Wires and Cables. Various sizes of Conductor-Rubber Insulation.

Sprague Electric Works of the General Electric Company, 527 West 34th St., New York, N. Y.

Panel Boards and Cabinets. Catalog No. 47901. 8 x 10½ in. 70 pp. Illustrated. Panel Boards and Cabinets shown in this catalog have been selected after careful study of the general requirements. All appliances listed herein meet with the requirements of the National Board of Fire Underwriters.

Panel Circuits. Bulletin No. 47941. 8 x 10½ in. 8 pp. Illustrated. In addition to circuits for panel boards illustrated, a full line of circuits for panel boards having fuses inside branch circuit switches is also listed.

Panel Boards and Cabinets. Bulletin No. 47942. 8 x 10½ in. 16 pp. Illustrated. This bulletin covers the ever increasing demand for devices that provide maximum safety to the operator.

Narrow-Unit Panelboards (Safety Type). Pamphlet. 8 x 10½ in. 4 pp. Illustrated. Describes latest Sprague Panel Board, very narrow, but complete.

Standard Electric Time Co., Springfield, Mass.

Catalog of Standard Electric Time Systems. No. 35. 8¾ x 6 in. 58 pp. Illustrated. Shows all types of Standard Electric Time Devices, with full information about mechanism, construction, design and installation.

School Booklet. 8⅛ x 11 in. 8 pp. Illustrated. Describes completely the use of Standard Electric Time, Program and Signal Systems in schools. References included.

Industrial Booklet. 8⅛ x 11 in. 12 pp. Illustrated. Describes use of Standard Electric equipment in industrial establishments, with references.

Data Folder for Architects. 8½ x 11 in. Illustrated. Looseleaf folder, to be added to from time to time, giving specifications and wiring diagrams and other useful data.

Varnum Door Engine Company, 949 West 16th St., Los Angeles, Calif.

Varnum Electric Door Engines. Booklet. 5 x 7¾ in. 16 pp. Illustrated. Descriptive booklet containing illustrations and list of representative institutions now using Varnum Door Engines.

Westinghouse Electric & Mfg. Company, East Pittsburgh, Pa.

Safety Switches. Folder F-4434B. 3½ x 6 in. 2 pp. The 100% Safe Service Entrance Switch.

Meter Service Switches. Booklet F-4484. 3½ x 6 in. 16 pp.

Panel Boards. Catalog 22A. 8½ x 11 in. 16 pp. Illustrated.

What Fans Are For. Booklet F-4520. 3½ x 6 in. 16 pp. Illustrated in color.

ELEVATORS

Kaestner & Hecht Co., Chicago, Ill.

Bulletin 500. Contains 32 pp. Giving general information on passenger elevators for high buildings.

Bulletin 530. Interlocks for Passenger and Freight Elevators.

Bulletin. Signals for Passenger and Freight Elevators.

Otis Elevator Company, 11th Ave. & 26th Street, New York, N. Y.

Otis Push Button Controlled Elevators. Booklet. 6 x 9 in. 56 pp. Illustrated. Detailed description of Otis Push Button Elevators. Their uses in residences, stores, institutions, apartment houses, business offices and banks, etc.

Otis Gravity Spiral Conveyors. Booklet. 6 x 9 in. 56 pp. Illustrated. Gravity spiral conveyors for lowering packaged merchandise, boxed, caged and bundled goods in factories, warehouses, terminal buildings, etc.

Otis Geared and Gearless Traction Elevators of all Types. Descriptive leaflets. 8½ x 11 in. Illustrated. Full details of machines, motors and controllers for these types.

Escalators. Booklet. 8½ x 11 in. 22 pp. Illustrated. Describes use of escalators in subways, department stores, theaters and industrial buildings. Also inclined elevators and dock elevators.

Richards-Wilcox Mfg. Co., Aurora, Ill.

Elevators. Booklet. 8½ x 11 in. 24 pp. Illustrated. Describes complete line of "Ideal" elevator-door hardware and checking devices, also automatic safety devices.

Sedgwick Machine Works, 151 West 15th Street, New York.

Catalog and descriptive pamphlets. 4¼ x 8¼ in. 70 pp. Illustrated. Descriptive pamphlets on hand power freight elevators, sidewalk elevators, automobile elevators, etc.

FENCES

The Stewart Iron Works Company, Cincinnati, Ohio.

Book of Designs "B." 9 x 12 in. 80 pp. Illustrated. Book of designs illustrated from photographs of ornamental iron fence and entrance gates erected by us. Valuable to architects.

FIRE DOORS —See Doors, Windows and Trim, Metal

FIREPLACE EQUIPMENT

Covert Co., H. W., 137 E. 46th Street, New York, N. Y.

Hints on Fireplace Construction. Catalog. 5⅝ x 8½ in. 11 pp. Illustrated. Diagrams of construction and installation of Covert "Improved" and "Old Style" Dampers and Smoke Chambers. Also illustrations of Covert brass and wrought iron Fireplace Fittings.

FIREPROOFING

The General Fireproofing Company, Youngstown, Ohio.

Fireproofing Handbook. 64 pp. 8½ x 11 in. Illustrated. Gives methods of construction, specifications, data on Herringbone metal lath, steel tile, Trussit solid partitions, steel lumber, self-sentering formless concrete construction.

FLOORING

Armstrong Cork & Insulation Co., 132 24th Street, Pittsburgh, Pa.

Linotile Floors. Catalog. 6 x 9 in. 40 pp. Color plates. Describes Linotile, a composition of ground cork, wood flour, linseed oil and various gums and pigments in tile form.

Armstrong's Cork Tile. Revised Edition. Booklet. 24 pp. 5 x 7 in. Illustrated in color. Contains complete specifications.

Armstrong Cork Co. (Linoleum Dept.), Lancaster, Pa.

Armstrong's Linoleum Floors. Catalog. 8½ x 11 in. 54 pp. Color plates. A technical treatise on linoleum, including table of gauges and weights and specifications for installing linoleum floors.

Decorative Floors. Booklet. 11¼ x 15 in. 16 pp. Color plates.

Armstrong's Linoleum Pattern Book, 1923. Catalog. 3½ x 6 in. 168 pp. Color plates. Reproductions in color of all patterns of linoleum and cork carpet in the Armstrong line.

Quality Sample Book. Three books. 3½ x 5¾ in. Showing all gauges and thicknesses in the Armstrong line of linoleum and cork carpets.

Detailed Directions for Laying and Caring for Linoleum. Handbook. 5 x 7 in. 48 pp. Instructions for linoleum layers and others interested in learning most satisfactory methods of laying and taking care of linoleum.

Business Floors. Booklet. 6 x 9 in. 48 pp. Illustrated in color. Explains use of linoleum for offices, stores, etc., with reproductions in color of suitable patterns, also specifications and instructions for laying.

Carter Bloxonend Flooring Co., Long Bldg., Kansas City, Mo.

Bloxonend Flooring. Booklet. 3¼ x 6¼ in. 20 pp. Illustrated. Describes uses and adaptability of Bloxonend Flooring to concrete, wood or steel construction, and advantages over loose wood blocks.

Specification Sheet. 4 pp. 8½ x 11 in. Illustrated. Standard Specifications in convenient form for Architects and Engineers.

Lateral Nailing Specification. Folder. 8½ x 3¾ in. 4 pp. Illustrated. Shows how this method of nailing eliminates embedded sleepers, wood sub-floor or nailing strips.

What's in a Name? Folder. 8½ x 11 in. Illustrated. Enumerates advantages of a heavy service flooring that lays smooth and stays smooth.

The Marbleloid Co., 461 Eighth Ave., New York, N. Y.

The Universal Flooring for Modern Buildings. Booklet. 6¾ x 9¾ in. 32 pp. Illustrated. Describes uses and contains specifications for Marbleloid flooring, base, wainscoting, etc.

Marbleloid Flooring for Hospitals. Bulletin. 8½ x 11 in. 4 pp. Illustrated. Describes the especial features of this composition floor for hospital buildings.

Marbleloid Specifications. Booklet. 8½ x 11 in. 4 pp. Illustrated.

Marbleloid Flooring for Schools. Bulletin. 8½ x 11 in. 4 pp. Illustrated. Describes special features of this composition floor for school buildings.

Thos. Moulding Brick Company, 133 West Washington St., Chicago, Ill.

T-M-B Mastic Flooring. Catalog. 6 x 9¼ in. 16 pp. Illustrated. Includes specifications also.

Muller Co., Franklyn R., Waukegan, Ill.

Asbestone Composition Flooring. Circulars. 8½ x 11 in. Description and Specifications.

The Nairn Linoleum Company, 179 Belgrove Drive, Kearny, N. J.

Linoleum. Booklet. 5½ x 8½ in. 68 pp. Illustrated in color. Reproductions in color of Inlaid, Printed, Plain and Battleship Linoleum; also Cork Carpets and Felt Base Floor Coverings.

Oak Flooring Advertising Bureau, 1057 Ashland Block, Chicago, Ill.

Modern Oak Floors. Booklet. 6⅛ x 9¼ in. 24 pp. Illustrated. A general book that tells the complete story on Oak Flooring.

Oak Flooring, How and Where to Use it. Booklet. 3½ x 6¼ in. 16 pp. Illustrated. A small, technical book showing the general rules, standard thickness and widths, how to lay, finish and care for oak floors.

Stedman Products Company, South Braintree, Mass.

Six-page folder, 8½ x 10½ in., illustrated in colors, giving complete description of Stedman Naturized Flooring, Tiles, Wainscoting, Sanitary Bases, Stair Treads, etc. Technical data, recommendations, and special flooring service.

FLOOR HARDENERS

General Chemical Company, 40 Rector Street, New York City.

Hard-n-tyte Engineering Service. Booklet. 16 pp. 7½ x 10½ in. Describes Hard-n-tyte and its uses in connection with surface treatments of concrete with illustrations of specific applications.

The Hard-n-tyte Specification. Folder. 2 pp. 7½ x 10½ in. Gives exact specifications for concrete floor finish.

Sample Bond. 9 x 14½ in. Duplicate of Five Year Guaranty Bond furnished on floors treated with Hard-n-tyte.

FLOOR HARDENERS (CHEMICAL)

Sonneborn Sons, Inc., L., 116 Fifth Ave., New York.

Lapidolith, the liquid chemical hardener. Complete sets of specifications for every building type in which concrete floors are used, with descriptions and results of tests.

FURNACES—See Heating Equipment

A GUARANTEE

ANACONDA BRASS PIPE is absolutely guaranteed. This complete assurance of perfect service is made possible by improved methods of manufacture, backed by a system of inspection which permits no pipe to leave our mills until its freedom from defects has been demonstrated in tests exceeding those of actual service.

Brass Pipe made by The American Brass Company can be identified by the Trademark—ANACONDA—stamped in the metal.

ANACONDA
from mine to consumer
TRADE MARK

THE AMERICAN BRASS COMPANY
GENERAL OFFICES: WATERBURY, CONN.
IN CANADA: ANACONDA AMERICAN BRASS LIMITED, NEW TORONTO, ONTARIO

SELECTED LIST OF MANUFACTURERS' PUBLICATIONS — *Continued from page 72*

FURNITURE

Estey Organ Company, Brattleboro, Vt.

Pipe Organs. Complete specifications and full information furnished to the architect for pipe organ to be installed in any given residence upon receipt of plans and other particulars.

Hampton Shops, 18 East 50th St., New York, N. Y.

Glimpses from Hampton Exhibits. Brochure. 16 pp. 5 x 7½ in. Illustrated. Shows examples of Hampton work and gives one an idea of their resources. Of interest to the client as well as to the architect.

Kensington Mfg. Company, 14 East 32nd St., New York, N. Y.

Photographs and full description of hand-made furniture in all the period styles furnished promptly in response to a specific inquiry.

Illustrated booklet indicative of the scope, character and decorative quality of Kensington furniture mailed on request.

Mahogany Association, Inc., 1133 Broadway, New York, N. Y.

The Antique of Tomorrow. Booklet. 3 x 6 in. 6 pp. Illustrated. Shows the advantages of buying genuine mahogany furniture today—it is "the antique of tomorrow."

Chippendale and Mahogany. Booklet. 3½ x 8½ in. 6 pp. Illustrated. Directions, with diagrams, for selecting Chippendale furniture. Interesting and instructive.

The Home Beautiful. Booklet. 4 x 12 in. 6 pp. Illustrated. Shows use of mahogany woodwork in the modern home, with floor plan and comparative costs.

Mahogany in Colonial Days. Booklet. 4 x 12 in. 6 pp. Illustrated. Describes use of mahogany in New England, Dutch and Southern Colonial forms of furniture.

GLASS CONSTRUCTION

Mississippi Wire Glass, 220 Fifth Avenue, New York.

Mississippi Wire Glass. Catalog. 3⅞ x 8½ in. 32 pp. Illustrated. Covers the complete line.

Plate Glass Mfrs. of America. First National Bank Bldg., Pittsburgh, Pa.

Plate Glass. Booklet. 5¾ x 9¼ in. 12 pp. Describes manufacture and use of plate glass, with sizes.

GRANITE—See Stone, Building

HARDWARE

The American Pulley Company, 4200 Wissahickon Ave., Philadelphia, Pa.

Sash Pulleys of Pressed Metal. Booklet. 7½ x 5½. in 44 pp. Illustrated. Contains description of pressed metal sash pulley, with complete dimensions and style numbers for finishes and trade name.

Cutler Mail Chute Company, Rochester, N. Y.

Cutler Mail Chute Model F. Booklet. 4 x 9¼ in. 8 pp. Illustrated

McCabe Hanger Manufacturing Company, 425 West 25th St., New York, N. Y.

Elevator Door Hangers. Booklet. 6 x 9 in. 8 pp. Illustrated. Descriptive booklet showing different types of elevator door hangers. Full size details sent upon request.

Special Folding & Accordion Door Hangers. Booklet. 6 x 9 in. 8 pp. Illustrated. Booklet with complete description of various types of folding and accordion door hangers. Full size details upon request.

McKinney Mfg. Co., Pittsburgh, Pa.

McKinney Complete Garage Hardware Sets. Catalog. 6¾ x 10 in. 20 pp. Illustrated. Describes full line of complete garage hardware sets for all kinds of entrances, with views of typical entrances and sketches.

McKinney Hinges and Butts. General Catalog. 6¾ x 10 in. Illustrates and describes complete line of McKinney wrought builders' hardware products, including hinges, butts, door hangers and track, latches, garage hardware and specialties.

Vonnegut Hardware Co., Indianapolis, Ind.

Von Duprin Self-Releasing Fire Exit Devices. Catalog. 12F 8 x 11 in. 41 pp. Illustrated.

"Saving Lives." Booklet. 3¼ x 6 in. 16 pp. Illustrated. A brief outline why Self-Releasing Fire Exit Devices should be used.

HEATING EQUIPMENT

American District Steam Company. North Tonawanda, N. Y.

Adsco Heating. Bulletin No. 158. 6¼ x 9¼ in. 16 pp. Illustrated. Describes Adsco System of Atmospheric Steam Heating, its principle and operation.

Catalog No. 21-AF. 6 x 9 in. 200 pp. Illustrated. Lists and describes the full line of equipment and devices manufactured for use on underground and interior steam mains, expansion joints, steam meters, condensation meters, traps, flange fittings, angle fittings, manhole curbs, alignment guides, etc.

Clarage Fan Company, Kalamazoo, Mich.

Catalog No. 52. 8½ x 11 in. 84 pp. Illustrated. Describes Clarage Kalamazoo Multiblade Fans and Heaters for use in schools, churches, hospitals and industrial plants. Engineering data, capacity tables and dimensions included.

James B. Clow & Sons, 534 S. Franklin Street, Chicago, Ill.

Gasteam. Catalog. 6 x 9 in. 16 pp. Illustrated. New radiator using gas for fuel.

The Dole Valve Co., 1923 Carroll Ave., Chicago, Ill.

Dole Packless Radiator Valves. Catalog No. 200. 3¾ x 8¼ in. 32 pp. Illustrated. Complete description of Dole Valves, showing their exclusive feature, ball-bearing construction. Specifications, directions for ordering, and guarantee. Also describes Dole Air Valves.

Excelso Specialty Works, 119 Clinton St., Buffalo, N. Y.

Excelso Water Heater. Booklet. 12 pp. 3 x 6 in. Illustrated. Describing the new Excelso method of generating domestic hot water in connection with heating boilers. (Firepot Coil eliminated.)

The Fulton Company, Knoxville, Tenn.

Sylphon Temperature Regulators. Bulletin T–103, 8½ x 11 in. 16 pp. Complete data on Sylphon temperature regulators for air and liquids. Catalog 100, complete line Sylphon Heating Specialties.

Damper Regulators, Air and Vent Valves. Catalog No. 100, 3¾ x 6¼ in. Sylphon Damper Regulators for steam, hot water and vapor systems. Sylphon Air and Vent Valves.

Gorton & Lidgerwood Co., 96 Liberty Street, New York, N. Y.

Gorton Self-Feeding Boilers. Booklet. 4¼ x 7¼ in. 32 pp. Illustrated. Descriptions, specifications and prices.

HEATING EQUIPMENT—Continued

Johnson Service Company, 149 Michigan St., Milwaukee, Wis.

Regulation of Temperature and Humidity. Booklet. 11¼ x 8½ in. 64 pp. Illustrated. Describes Johnson system of pneumatic, automatic regulation of temperature and humidity, and illustrates thermostats, valves, air compressors, dampers and other parts.

Johnson Electric Thermostats, Valves and Controllers. Booklet. 6⅛ x 3½ in. 24 pp. Illustrated. Excellent plates showing electric thermostats and controllers.

Kelsey Heating Company, James St., Syracuse, N. Y.

Booklet No. 5. 4 x 9 in. 32 pp. Illustrated. A dealers' booklet showing the Kelsey Warm Air Generator Method of warming and distributing air. Gives dimensions, heating capacities, weights, kind of coal recommended, and shows the mechanical and gravity system of heating homes, churches and schools.

Monroe Pipeless Booklet. 4½ x 8 in. 20 pp. Illustrated.

Monroe Tubular Heater. Booklet. 4½ x 8 in. 20 pp. Illustrated. General Booklet giving capacities, dimensions, weights, etc.

Syracuse Pipeless Booklet. 4½ x 8 in. 12 pp. Illustrated. General Booklet, giving sizes and capacities.

Kewanee Boiler Co., Kewanee, Ill.

Kewanee on the Job. Catalog. 8½ x 11 in. 80 pp. Illustrated. Showing installations of Kewanee boilers, water heaters, radiators, etc.

Catalog No. 73. 6 x 9 in. 35 pp. Illustrated. Describes Kewanee steel power boilers with complete specifications.

Minneapolis Heat Regulator Company, Minneapolis, Minn.

The Heart of the Heating Plant. Catalog. 6 x 9 in. 20 pp. Illustrated. Describing the Minneapolis Heat Regulator, its construction, application and operation for the automatic control of temperature where coal, gas, fuel oil or street steam is used.

Page Boiler Company, The Wm. H., 141 West 36th Street, New York, N. Y.

Page Boilers. "*The Distinguished Service Line.*" Catalog. 4½ x 7½ in. 120 pp. Illustrated. Descriptions with specifications of the "Volunteer" Round and "Monarch" Square Sectional Steam and Hot Water Boilers—the "Monarch" Up-Draft Smokeless and Down-Draft Smokeless Boilers—Push Nipple and Header Types—with method for apportioning size of boiler and radiation, and other valuable heating data.

"Volunteer" Round Boilers. Folder. 6¼ x 9½ in. Illustrated. Ratings and dimensions, and assemblage of the various series.

"Monarch" (Regular) Square Sectional Boilers. Push Nipples and Header Types. Folder. 8 x 11 in. Illustrated. Description, ratings and Header Types. Folder. 8 x 11 in. Illustrated. Description, ratings and dimension.

"Monarch" Up-Draft Smokeless and Down-Draft Smokeless Boilers. Push Nipple and Header Types. Folders. 8 x 11 in. Illustrated. Description of the features which adapt the "Monarch" Up-Draft Smokeless for the use of any available fuel, a vital factor in these times of shortage and substitution. Ratings and dimensions.

Utica Heater Company, Utica, N. Y.

Imperial Round and Square Boilers and Supplies. Catalog. 3½ x 6½ in. Gives complete data on small heaters.

Special Folders. 8½ x 11 in. "Warmth and Comfort," describing the scientifically correct NEW IDEA pipeless furnaces. "SUPERIOR Warm Air Pipe Furnaces," a standard line of heating equipment for over forty years. "SUPER–SMOKELESS Pipe and Pipeless Furnaces," a new and remarkably efficient warm air heater, burning cheap soft coal without smoke—utilizing the principle of the Bunsen Burner.

"Imperial Sectional Square Boilers," for hard coal heating of all types of buildings.

Utica Imperial SUPER–SMOKELESS Boiler. Catalog. 8½ x 11 in. Consists of the following seven bulletins, either loose or bound together: (1) School Heating Bulletin. (2) Public Building Bulletin. (3) Theater Heating Bulletin. (4) Churches and Religious Institutions. (5) Residences, Apartments and Hotels. (6) Offices, Industrial Buildings and Garages. (7) Technical Bulletin describing patented Bunsen Burner design and construction of the SUPER-SMOKELESS BOILER, which burns the cheapest grades of soft coal smokelessly and operates equally well with hard coal, coke or fuel oil.

HEAT REGULATORS—See Heating Equipment

HOISTS

Gillis & Geoghegan, 544 West Broadway, New York.

Hoists for Industrial Plants. Booklet. 6 x 8¾ in. 8 pp. Illustrated. Labor saving service in the lifting or lowering of lighter loads, through the use of G & G Telescopic and Non-telescopic Hoists.

Removing Ashes. Booklet. 6 x 8¾ in. 6 pp. Illustrated. Removing ashes from boiler room directly to wagon by electrically operated Telescopic Hoists.

HOLLOW TILE—See Tile, Hollow

HOSPITAL EQUIPMENT

The International Nickel Company, 67 Wall St., New York, N. Y.

Hospital Applications of Monel Metal. Booklet. 8½ x 11½ in. 16 pp. Illustrated. Gives types of equipment in which Monel Metal is used, reasons for its adoption, with sources of such equipment.

INCINERATORS

The Kerner Incinerator Company, 1029 Chestnut St., Milwaukee, Wis.

The Kernerator. Booklet. 5½ x 9¼ in. 40 pp. Illustrated. Describes principle and design of the Kernerator, guarantee and service, also gives illustrations of buildings where it has been installed and testimonials.

Sanitary Elimination of Household Waste. Booklet. 4 x 9 in. 16 pp. Illustrated. Shows process, installations and advantages of the Kernerator.

Sanitary Disposal of Waste in Hospitals. Booklet. 4 x 9 in. 12 pp. Illustrated. Shows how this necessary part of hospital service can be taken care of by the Kernerator.

Fuel crises, due to disturbances in the coal industry and transportation difficulties, are increasingly frequent, and the boiler you are about to specify must be designed to burn any kind and grade of fuel, without waste. For economy, durability and ease of operation, the construction of the boiler must be simple—the principle correct!

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is such a boiler! In it can be burned any fuel—and in times of stress (as today), low grades of soft coal or substitute combinations of fuels can be utilized—with a saving of from 25% to 33⅓%—accomplished by the introduction of supplementary air at the rear of the fire box, a sufficient amount being mixed with the heavy gases generated to permit of complete combustion. Specify the MONARCH and insure your client a satisfactory and economical heating plant.

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"The Distinguished Service Line"

SELECTED LIST OF MANUFACTURERS' PUBLICATIONS — *Continued from page 74*

INSULATION

Bishopric Manufacturing Co., 103 Este Ave., Cincinnati, Ohio.

For All Time and Clime. Booklet. 6 x 9 in. 48 pp. Illustrated. Describing the use of Bishopric stucco base and Bishopric plaster base.

Philip Carey Co., The, Cincinnati, Ohio.

Carey Asbestos and Magnesia Products. Catalog. 6 x 9 in. 72 pp Illustrated.

Johns-Manville, Inc., Madison Ave. and 41st St., New York, N. Y.

Johns-Manville Service to Power Users. Catalog. 8½ x 11 in. 150 pp. Illustrated. Contains valuable data on all forms of insulations, packings, steam traps, high temperature cements, brake locks and linings, also general technical data.

United States Mineral Wool Co., 280 Madison Ave., New York, N. Y.

The Uses of Mineral Wool in Architecture. Booklet. 5¼ x 6⅝ in 24 pp. Illustrated. Describes properties of mineral wool as insulation against heat, frost, sound. Specifications and section drawings for use as a fireproofing. Rule for estimate and cost.

KITCHEN EQUIPMENT

Colt's Patent Fire Arms Mfg. Company, Hartford, Conn.

AUTOSAN Dish and Silver Cleaning Machines. Booklets. 6x9 in. Describing rotary table type and conveyor type machines.

Wm. M. Crane Company, 16–20 West 32nd St., New York, N. Y.

VULCAN Gas Ranges and Appliances. Booklet. 5 x 8 in. 50 pp. Illustrated. Describes complete line, including VULCAN SMOOTH-TOP Compact Cabinet Gas Ranges for kitchens in the home.

VULCAN Gas Equipment for Hotels, Hospitals, Restaurants, etc. Booklet. 5 x 8 in. 45 pp. Illustrated. Equipment for heavy-duty cooking requirements, with information of value to architects in planning kitchens.

The International Nickel Company, 67 Wall St., New York, N. Y

Hotel, Restaurant and Cafeteria Applications of Monel Metal. Booklet. 8½ x 11 in. 32 pp. Illustrated. Gives types of equipment in which Monel Metal is used, with service data and sources of such equipment.

Pick & Company, Albert, 208 W. Randolph St., Chicago, Ill.

School Cafeterias. Portfolio. 17 x 11 in. 44 pp. Illustrated. An exhaustive study of the problems of school feeding, with copious illustrations and blue-prints. Very valuable to the architect.

Hotel, Apartment Building, Club and Institution Installations. Portfolio. 17 x 11 in. 100 pp. Shows, mostly by plates, how the Albert Pick Company equips hotels completely from top to bottom.

Equipment for Cafeterias, Lunch Rooms, Restaurants, and Dining Rooms. Portfolio. 17 x 11 in. 86 pp. Illustrated. The last word in Cafeteria equipment to meet all requirements.

LATH, METAL AND REINFORCING

The General Fireproofing Company, Youngstown, Ohio

Herringbone Metal Lath Handbook. 8½ x 11 in. 32 pp. Illustrated Standard specifications for Cement Stucco on Herringbone Rigid Metal Lath and interior plastering.

National Steel Fabric Company, Pittsburgh, Pa.

Folder. 8½ x 11 in. 6 pp. Illustrated. Describes National Stucco-Plaster Reinforcement, a base for exterior stucco and interior plastering, composition flooring, etc., with photographs and drawings.

North Western Expanded Metal Co., 934 Old Colony Building, Chicago, Ill.

Designing Data. Catalog. 6 x 9 in. 94 pp. Illustrated. Describes most efficient use of Econo Expanded Metal Reinforcing.

Formless Concrete Construction. Catalog. 6 x 9 in. 80 pp. Illustrated. Describes use of T-Rib Chanelath, a form and reinforcing for concrete.

LAUNDRY CHUTES

The Pfaudler Company, 217 Cutter Building, Rochester, N. Y.

Pfaudler Glass-Lined Steel Laundry Chutes. Booklet. 5⅛ x 7⅜ in. 16 pp. Illustrated. A beautifully printed brochure describing in detail with architects' specifications THE PFAUDLER GLASS LINED STEEL LAUNDRY CHUTES. Contains views of installations and list of representative ones.

LEADERS AND GUTTERS

Copper & Brass Research Assn., 25 Broadway, New York, N. Y.

Copper Roofing. Booklet. 8½ x 11 in. 32 pp. Illustrated. Gives information regarding weights of various roofing materials. Describes up-to-date practice and methods of laying copper roofs; decorative effects and how to obtain them. Gives specifications and details. Flashings, reglets, gutters and leaders, cornices and copper-covered walls.

MAIL CHUTES

Cutler Mail Chute Company, Rochester, N. Y.

Cutler Mail Chute Model F. Booklet. 4 x 9¼ in. 8 pp Illustrated

MANTELS

Arnold & North, Inc., 124 East 41st St., New York, N. Y.

Booklet. 5 x 6 in. Contains photographic reproductions of a variety of old English and Colonial mantelpieces with complete information as to sizes and prices.

Arthur Todhunter, 414 Madison Ave., New York, N. Y.

Mantels and Fireplace Equipment. Booklet. 8½ x 11 in. Illustrated. Separate sheet plates showing mantels installed and furnished, also andirons and grates grouped with suitable pieces, also lanterns, weather-vanes and hand-wrought hardware. All sizes and descriptions given on each plate.

MARBLE

The Georgia Marble Company, Tate, Ga. New York office, 1328 Broadway.

Why Georgia Marble is Better. Booklet. 3⅝ x 6 in. Gives analysis, physical qualities, comparison of absorption with granites, opinions of authorities, etc.

Convincing Proof. Booklet. 3⅝ x 6 in. 8 pp. Classified list of buildings and memorials in which Georgia Marble has been used, with names of Architects and Sculptors.

Tompkins-Kiel Marble Company, 505 Fifth Ave., New York, N. Y.

Reproductions in natural colors of imported and domestic marbles and stone for interior and exterior uses.

Bulletins, 9¾ x 12¾ in., illustrating buildings of various types in which Tompkins-Kiel Marble Company's imported and domestic marbles and stone have been used.

MARBLE—Continued

Vermont Marble Company, Adv. Dept., Proctor, Vt.

The Book of Vermont Marble. Booklet. 8½ x 11 in. 68 pp. Illustrated. A reference book for architects, describing various kinds of Vermont Marble, with illustrations and details.

Marble Banks and Modern Business. Booklet. 7¾ x 10½ in. 48 pp. Illustrated. Contains many pictures of important Vermont Marble bank work, with certain tests and analyses relating to the product.

METAL LATH—See Lath, Metal and Reinforcing

METALS

American Brass Company, Waterbury, Conn.

Illustrated pamphlet describes the use and adaptability of extruded architectural shapes to meet the architect's design.

American Sheet & Tin Plate Co., Frick Building, Pittsburgh, Pa.

Reference Book. Pocket Ed. 2½ x 4½ in. 168 pp. Illustrated. Covers the complete line of Sheet and Tin Mill Products.

Apollo and Apollo-Keystone Galvanised Sheets. Catalog. 8½ x 11 in. 20 pp. Illustrated.

Research on the Corrosion Resistance of Copper Steel. Booklet. 8½ x 11 in. 24 pp. Illustrated. Technical information on results of atmospheric corrosion tests of various sheets under actual weather conditions.

Facts Simply and Briefly Told. Booklet. 8½ x 11 in. 16 pp. Illustrated. Non-technical statements relating to Keystone Copper Steel.

Black Sheets and Special Sheets. Catalog. 8½ x 11 in. 28 pp. Illustrated. Describes standard grades of Black and Uncoated Sheets, together with weights, bundling tables, etc.

Bright Tin Plates. Catalog. 8½ x 11 in. 16 pp.

Bridgeport Brass Company, Bridgeport, Conn.

Seven Centuries of Brass Making. Booklet. 10½ x 8 in. 78 pp. Illustrated in color. A brief history of the ancient art of Brass Making and its early (and even recent) method of production—contrasted with that of the Electric Furnace Process—a twentieth century achievement of the Bridgeport Brass Company.

Tested High-Speed Brass Rod. Booklet. 10½ x 8 in. 16 pp. Illustrated. Short treatise on the manufacture of Brass Rod for use in Screw Machines, with particular reference to improvements originated by the Bridgeport Brass Company.

Copper & Brass Research Assn., 25 Broadway, New York, N. Y.

Copper Roofing. Booklet. 8½ x 11 in. 32 pp. Illustrated. Gives information regarding weights of various roofing materials. Describes up-to-date practice and methods of laying copper roofs; decorative effects and how to obtain them. Gives specifications and details. Flashings, reglets, gutters and leaders, cornices and copper-covered walls.

The International Nickel Company, 67 Wall St., New York, N. Y.

The Choice of a Metal. Booklet. 6¼ x 3¼ in. 16 pp. Illustrated. Monel Metal—its qualities, uses and commercial forms, briefly described.

METAL TRIM—See Doors and Trim, Metal

MILLWORK

Curtis Companies Service Bureau, Clinton, Iowa.

Architectural Interior and Exterior Woodwork, Standardized. Book. 9 x 11½ in. 240 pp. Illustrated. This is an Architects' Edition of the complete catalog of Curtis Woodwork, as designed by Trowbridge & Ackerman. Contains many color plates.

Curtis Companies Service Bureau, Clinton, Iowa.

Better Built Homes, Vols. XV–XVIII incl. Booklet. 9 x 12 in. 40 pp. Illustrated. Designs for houses of five to eight rooms, respectively, in several authentic types, by Trowbridge & Ackerman, architects for the Curtis Companies.

Curtis Companies Service Bureau, Clinton, Iowa.

Curtis Details. Booklet. 19½ x 23½ in. 20 pp. Illustrated. Complete details of all items of Curtis woodwork, for the use of architects.

MORTAR COLORS

Clinton Metallic Paint Co., Clinton. N. Y.

Color Harmony in Brick Work. Folder. 6⅜ x 3¾ in. Illustrated. Describes use of Clinton Mortar Colors, with illustrations in colors.

PAINTS. STAINS, VARNISHES AND WOOD FINISHES

Boston Varnish Co., Everett Station, Boston 49, Mass.

The Inviting Home. Booklet. 5½ x 8 in. 16 pp. Illustrations in colors of attractive interiors.

Set of Twelve Measured Drawings. 8½ x 11 in.

Kyanize—Its Important Place in Recent Eastern Architecture. Booklet. 6 x 9 in. 16 pp. Varnish and Enamel Specifications.

Cabot, Inc., Samuel, Boston, Mass.

Cabot's Creosote Stains. Booklet. 4 x 8½ in. 16 pp. Illustrated.

The Hockaday Company, 1823 Carroll Ave., Chicago, Ill.

Paint Mileage. Book. 8 x 10½ in. 56 pp. Illustrated. A reference book on interior painting. Describes use of paint over all sorts of surfaces, with illustrations of buildings where Hockaday has been specified. Hockaday service explained.

Solving Your Paint Problems. Booklet. 8½ x 11 in. 44 pp. Illustrated. Describes use of Hockaday Paint in Industrial Buildings, particularly in textile mills. Details of Hockaday service and specifications.

Martin Varnish Co., 2500 Quarry St., Chicago, Ill.

Architectural Specifications. Booklet. 8½ x 11 in. 20 pp. Illustrated. Complete guide for Architects in specifying Martin Varnish Products.

Your Floors. Booklet. 5 x 7 in. 20 pp. Illustrated. Explains fully how to finish all kinds of floors and woodwork with Martin's Pure Varnish.

De Luxe Enamel. Folder. 3½ x 7 in. 8 pp. Illustrated. Describes Martin's Enamel and shows color-card.

Finishes. Booklet. 3¼ x 6¼ in. 16 pp. Illustrated in colors. Copious illustrations in color and details of all kinds of wood-finishing.

From a Painting
By J. O. Brubaker

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75th Anniversary

SELECTED LIST OF MANUFACTURER'S PUBLICATIONS — *Continued from page 76*

PAINTS, STAINS, VARNISHES AND WOOD FINISHES—Cont'd

Murphy Varnish Company, 234 McWhorter St., Newark, N. J.

The Book of Decoration. Booklet. 46 pp. 8½ x 11 in. Illustrated. Written and illustrated by masters of the art. Old and modern interiors by famous architects. Characteristic paneling, ceilings, floors, hangings and furnishings of each period are illustrated and charted. Price, 50 cents.

Eight Periods and Their Modern Adaptation. Furnished to Architects and Builders. In this volume the historic architectural periods are illustrated with authentic photographs of famous interiors. Each period is charted to show correct treatment for different rooms. Complete architectural specifications included.

Univernish, the Universal Varnish. Booklet. 3¼ x 6 in. 8 pp. Describes the uses, working and economy of Univernish.

Muronic Enamel. Descriptive leaflet and price-list. 4 pp. 4 x 6 in.

National Lead Company, 111 Broadway, New York, N. Y.

Handy Book on Painting. Book. 5½ x 3¼ in. 100 pp. Gives directions and formulas for painting various surfaces of wood, plaster, metal, etc., both interior and exterior.

Red Lead in Paste Form. Booklet. 6¼ x 3½ in. 16 pp. Illustrated Directions and formulas for painting metals.

Came Lead. Booklet. 8¾ x 6 in. 12 pp. Illustrated. Describes various styles of lead cames.

Cinch Anchoring Specialties. Booklet. 6 x 3½ in. 20 pp. Illustrated. Describes complete line of expansion bolts.

The Ripolin Company., Cleveland, Ohio.

Ripolin Specification Book. 8 x 10¼. in 12 pp. Complete specifications and general instructions for the application of Ripolin, the original Holland enamel paint. Also directions for proper finishing of wood, metal, plaster, concrete, brick and other surfaces.

"Why Ripolin Has an International Reputation." 8 x 10¾ in. 24 pp. Designed for the architect's files to illustrate the many varied uses of Ripolin Enamel Paint in all parts of the world. Profusely illustrated.

The Glidden Company, Cleveland, Ohio.

"More Daylight." 8 x 10½ in. 20 pp. Portraying by illustrations and text the need and methods of modern mill painting.

Ruberoid Co., The (formerly the Standard Paint Co.), 95 Madison Avenue, New York, N. Y.

Preservative Coatings. Booklet. 6 x 9 in. 15 pp. Illustrated. Presents in a concise manner the properties and uses of the Ruberoid Company's various paint preparations.

Smith & Co., Edward, P. O. Box 76, City Hall Station, New York, N. Y.

Architect's Hand Book. 4¾ x 7½ in. 24 pp. Specifications and suggestions for painting, varnishing, enameling, etc.

Sonneborn Sons, Inc., L., Dept. 4, 116 Fifth Avenue, New York.

Paint Specifications. Booklet. 8½ x 10¾ in. 4 pp.

PARTITIONS

Improved Office Partition Company, 25 Grant St., Elmhurst, L. I.

Telesco Partition. Catalog. 8¼ x 11 in. 14 pp. Illustrated Shows typical offices laid out with Telesco partitions, cuts of finished partition units in various woods. Gives specifications and cuts of buildings using Telesco.

Detailed Instructions for erecting Telesco Partitions. Booklet. 24 pp. 8½ x 11 in. Illustrated. Complete instructions, with cuts and drawings, showing how easily Telesco Partition can be erected.

Richards-Wilcox Mfg. Co., Aurora, Ill.

Partitions. Booklet. 7 x 10 in. 32 pp. Illustrated. Describes complete line of track and hangers for all styles of sliding, parallel, accordion and flush door partitions.

The J. G. Wilson Corporation, 11 East 36th St., New York, N. Y.

Folding Partitions. Booklet. 8½ x 11 in. 16 pp. Illustrated. Covers the field of folding partitions for churches, schools, hotels, clubs and public institutions.

Rolling Partitions, Hygienic and Disappearing Door Wardrobes. Booklet. 6 x 9 in. 32 pp. Illustrated. Describes rolling partitions, particularly in churches and schools, and wardrobes as installed in schools and public institutions.

United States Gypsum Company, 205 West Monroe St., Chicago, Ill.

Pyrobar Partition Tile. 8½ x 11 in. 32 pp.

PIPE

American Brass Company, Waterbury, Conn.

Bulletin B-1, "Brass Pipe for Water Service." 8½ x 11 in. 28 pp. Illustrated. Gives schedule of weights and sizes (I. P. S.) of seamless brass and copper pipe, shows typical installations of brass pipe, and gives general discussion of the corrosive effect of water on iron, steel and brass pipe.

Bridgeport Brass Company, Bridgeport, Conn.

Bulletin No. 15. Brass Pipe and Piping. Booklet. 8 x 10½ in. 48 pp. Illustrated. When and how to use Brass Pipe. Brass Pipe compared with iron and steel pipe for hot water service. Corrosion. Description of manufacture of Bridgeport Plumrite Brass Pipe.

A. M. Byers Company, 235 Water St., Pittsburgh, Pa.

Bulletin 26-A. "What Is Wrought Iron?" 8 x 10¾ in. 40 pp. Illustrated. Descriptions of materials and processes employed in manufacturing Byers genuine wrought iron pipe. Factors influencing corrosion. Gives table of pipe sizes, weights, dimensions, tests, etc., and tabulated records of the life of iron and steel pipe in various kinds of service.

Bulletin 30. An Investigation of Pipe Corrosion in Hot Water Service. 8 x 10¾ in. 20 pp. Illustrated. Shows service records of iron, steel and brass pipe used for hot and cold water supply lines in 129 Pittsburgh Apartment Buildings.

Bulletin 32. Corrosion of Wrought Iron, Cast Iron and Steel Pipe in House Drainage Systems. 8 x 10¾ in. 32 pp. Illustrated. Data obtained through investigations conducted in New York and Chicago by Dr. Wm. P. Gerhard, C.E., and Thomas J. Claffy, Asst. Chief San. Inspector, city of Chicago.

Bulletin 38. The Installation Cost of Pipe. 32 pp. 8 x 10¾ in. Illustrated. Cost analyses of 20 different pipe installations, in power and industrial plants, office buildings, hotels, residences, etc.

Clow & Sons, James B., 534 S. Franklin Street, Chicago, Ill.

Catalog "A." 4 x 6½ in. 706 pp. Illustrated. Shows a full line of steam, gas and water works supplies.

PIPE — Continued

National Tube Co., Frick Building, Pittsburgh, Pa.

"National" Bulletin No. 2. Corrosion of Hot Water Pipe. (8½ x 11 in. 24 pp.) Illustrated. In this bulletin is summed up the most important research dealing with hot water systems. The text matter consists of seven investigations by authorities on this subject.

"National" Bulletin No. 3. The Protection of Pipe Against Internal Corrosion. (8½ x 11 in. 20 pp.) Illustrated. Discusses various causes of corrosion and details are given of the deactivating and deaerating systems for eliminating or retarding corrosion in hot water supply lines.

"National" Bulletin No. 25. "National" Pipe in Large Buildings. 8½ x 11 in. 88 pp. This bulletin contains 254 illustrations of prominent buildings of all types, containing "National" Pipe and considerable engineering data of value to architects, engineers, etc.

Modern Welded Pipe. Book of 88 pages (8½ x 11 in.), profusely illustrated with halftone and line engravings of the important operations in the manufacture of pipe.

Reading Iron Company, Reading, Pa.

Reading Genuine Wrought Iron Pipe in the Making and in Service. Bulletin No. 1. 8½ x 11 in. 32 pp. Illustrated. History of the Reading Iron Company. Origin of wrought iron—description of each process of manufacture of both buttweld and lapweld pipe—Reading Pipe in various fields.

Book of Standards. Booklet. 5 x 7 in. 48 pp. Illustrated. Complete tables showing dimensions, tests and list prices on each of the 552 different kinds of Reading Tubular goods. Two simple tests for distinguishing genuine wrought iron pipe.

The Painted Molecule. Booklet. 4 x 9 in. 8 pp. Illustrated. A brief, non-technical description of the reasons for the longer life of Reading Iron Pipe, with instances of actual service.

The Ultimate Cost. Booklet. 5¼ x 7¼ in. 24 pp. Illustrated in two colors. A comparison in actual figures of the initial cost and the ultimate cost of plumbing and heating systems in several kinds of homes.

PLUMBING EQUIPMENT

American Brass Company, Waterbury, Conn.

Benedict Nickel. Illustrated pamphlet descriptive of Benedict Nickel White Metal for high-grade plumbing fixtures.

Bridgeport Brass Company, Bridgeport, Conn.

Plumbing Supplies. Booklet. 10½ x 8 in. 20 pp. Illustrated. Describes a few of the different plumbing supplies manufactured by the Bridgeport Brass Company.

Brunswick-Balke-Collender Co., 623 S. Wabash Avenue, Chicago, Ill.

Whale-bone-ite Seat. Booklet. 3½ x 6¼ in. 4 pp. Illustrated.

Whale-bone-ite Seat. Booklet. 3½ x 6¼ in. 8 pp. Illustrated.

Clow & Sons, James B., 534 S. Franklin Street, Chicago, Ill.

Catalog "M." 9¼ x 12 in. 184 pp. Illustrated. Shows complete line of plumbing fixtures for Schools, Railroads and Industrial Plants

Crane Company, 836 S. Michigan Avenue, Chicago, Ill.

Crane Products in World Wide Use. Catalog. 5 x 9½ in. 24 pp. Illustrated.

Plumbing Suggestions for Home Builders. Catalog. 3 x 6 in. 80 pp. Illustrated.

Plumbing Suggestions for Industrial Plants. Catalog. 4 x 6½ in. 43 pp. Illustrated.

Eljer Company, 15 E. Van Buren St., Chicago, Ill.

The Standardized Sixteen. Booklet. 3¾ x 6¾ in. 16 pp. Illustrated. Describes fully the complete Eljer line of standardized plumbing equipment, with diagrams, weights, measurements and copious illustrations.

Standardized Sixteen. Circular. 3¾ x 6¾ in. 18 pp. Illustrated.

Complete catalog. 3¾ x 6¾ in. 104 pp. Illustrated.

Kohler Co., Kohler. Wis.

Catalog F. 7½ x 10⅝ in. 216 pp. Illustrates and describes the complete line of Kohler trade-marked plumbing ware.

Roughing-In Measurement Binder, 5 x 8 in., containing loose-leaf sheets on all staple fixtures.

Maddock's Sons Co., Thomas, Trenton, N. J.

Highest Grade Standardized Plumbing Fixtures for Every Need. Catalog. 5 x 7½ in. 94 pp. Illustrated. Covers the complete line.

Bathroom Individuality. Booklet. 6 x 9 in. 28 pp. Illustrated. Showing view of complete bathrooms with complete descriptions of floor plans.

Specifications for Plumbing Fixtures. Booklet. 9 x 12 in. 8 pp. Tables of specifications for industrial buildings, schools, apartments, hotels, etc.

Speakman Company, Wilmington, Del.

Speakman Showers and Fixtures. Catalog. 4½ x 7½ in. 250 pp. Illustrated. Catalog of Modern Showers and Brass Plumbing Fixtures, with drawings showing layouts, measurements, etc.

Toned Up In Ten Minutes. Booklet. 7½ x 10½ in. 16 pp. Illustrated. Modern Showers and Washups for Industrial Plants, showing the sanitary method of washing in running water.

Wolff Manufacturing Company, 255 No. Hoyne Ave., Chicago, Ill.

Plumbing Suggestions. Catalog. 3¼ x 6 in. 50 pp. Illustrated. Illustrating, describing and pricing Wolff Quality Plumbing Fixtures for residential installation.

PUMPS

Goulds Mfg. Co., The, Seneca Falls, N. Y.

Set of Twenty Bulletins. 7½ x 10⅝ in. 12 to 32 pp. each. Illustrated. Covers complete line of power and centrifugal pumps for all services.

Catalog "K." 6 x 9 in. 216 pp. Illustrated. Covers complete line of smaller size pumps.

Kewanee Private Utilities Co., 442 Franklin St., Kewanee, Ill.

Bulletin E. 7¾ x 10¼ in. 32 pp. Illustrated. Catalog. Complete descriptions, with all necessary data, on Standard Service Pumps, Indian Brand Pneumatic Tanks, and Complete Water Systems, as installed by Kewanee Private Utilities Co.

Make This Test!!

"I'VE figured your specification—I know your painting problems. Often you have asked me, 'Will this paint stand up?' If the material were new to me, all I could say was, 'Time will tell'."

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Then take a sponge, soap and water and wash the panel clean. Hockaday's original luster will greet you. You can't stain its surface. What does that prove? There's a moral: If you cannot stain Hockaday, neither will lime burning. That's why Hockaday is wall insurance.

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HOCKADAY

THE WASHABLE PAINT FOR ALL INTERIORS

SELECTED LIST OF MANUFACTURERS' PUBLICATIONS — *Continued from page 78*

RAMPS

Ramp Buildings Corporation, 115 Broad St., New York, N. Y.

The d'Humy Motoramp System of Building Design. Booklet. 8½ x 11 in. 20 pp. Illustrated. Describes the d'Humy system of ramp construction for garages, service buildings, factories, warehouses, etc., where it is desirable to drive motor vehicles or industrial tractors under their own power from floor to floor.

Storage Efficiency of Multi-Floor Garages. Leaflet. 8½ x 11 in. 4 pp. Illustrated. A brief discussion of comparative storage efficiencies of elevator garages, ordinary ramp garages, and d'Humy Motoramp garages.

Visibility. Pamphlet. 8½ x 11 in. 2 pp. Illustrated. Discussion of visibility feature of d'Humy Motoramp System with reference to illustration of one particular installation.

Series of Informal Bulletins on Garage Design. Sent upon request.

REINFORCED CONCRETE

The General Fireproofing Company, Youngstown, Ohio.

Self-Sentering Handbook. 8½ x 11 in. 36 pp. Illustrated. Methods and specifications on reinforced concrete floors, roofs and floors with a combined form and reinforcing material.

Truscon Steel Company, 250 W. Lafayette Blvd., Detroit, Mich.

Shearing Stresses in Reinforced Concrete Beams. Booklet. 8½ x 11 in. 12 pp.

ROOFING

American Brass Company, Waterbury, Conn.

Service Sheets 43-1 and 43-2, standard specifications and methods of laying copper roofings, flashings, hips, valleys, decks, gutters and leaders.

American Sheet & Tin Plate Co., Frick Bldg., Pittsburgh, Pa.

Better Buildings. Catalog. 8½ x 11 in. 32 pp. Describes Corrugated and Formed Sheet Steel Roofing and Siding Products, black, painted and galvanized, with directions for application of various patterns of Sheet Steel Roofing in various types of construction.

Copper—Its Effect Upon Steel for Roofing Tin. Catalog. 8½ x 11 in. 28 pp. Illustrated. Describes the merits of high grade roofing tin plates and the advantages of the copper-steel alloy.

"The Testimony of a Decade." Booklet. 8½ x 11 in. 16 pp., with Graphic Chart and illustration showing losses to various Iron and Steel Sheets for roofing. from atmospheric corrosion.

Copper & Brass Research Assn., 25 Broadway, New York, N. Y.

Copper Roofing. Booklet. 8½ x 11 in. 32 pp. Illustrated. Gives information regarding weights of various roofing materials. Describes up-to-date practice and methods of laying copper roofs; decorative effects and how to obtain them. Gives specifications and details. Flashings, reglets, gutters and leaders, cornices and copper-covered walls.

Creo-Dipt Company, 1025 Oliver St., North Tonawanda, N. Y.

Architectural Service Sheets. 8½ x 11 in. Illustrated. Working drawings of construction, with standard specifications for design and construction of same.

Federal Cement Tile Co., 110 So. Dearborn St., Chicago, Ill.

The Indestructible Roof. Booklet. 10 x 13 in. 32 pp. Illustrated. Illustrates and describes the installation of permanent concrete interlocking tile, tile with glass insets, flat tile and channel tile, on all types of industrial plants and other buildings with flat and pitched surfaces.

Standards. Booklet. 8½ x 11 in. 40 pp. Illustrated with full-page drawings. Gives full details of all forms of roof construction, of steel structure, ridge and gutter construction, purlin arrangement, spacing, etc., for standard roofs.

B. Mifflin Hood Brick Co., Atlanta, Ga.

Roof Tile—"Riviera" Mission and Shingle. Folder. 8½ x 11 in. 4 pp. Illustrated. Shows application of this tile, with suggested specifications and installation instructions. Free to architects and engineers.

Illinois Zinc Company, 332 S. Michigan Ave., Chicago, Ill.

Corrugated Sheets of Pure Rolled Zinc. Booklet. 3⅝ x 8½ in. 8 pp. Illustrated. Facts regarding adaptability of zinc for roofing. Specifications of Corrugated Zinc Sheets. Weights per square. Comparative gauge lists. Table of safe loads.

The Roof That's Always New. Booklet. 3⅜ x 6 in. 12 pp. Illustrated. Story of Illinois Zinc Shingles, their everlasting and artistic qualities. Information regarding a complete zinc roof, shingles, starting piece, valley, ridge and hip piece.

"How to Lay Illinois Zinc Shingles." Leaflet. 8½ x 11 in. 4 pp. Illustrated. Instructions for making a roof of Illinois Zinc Shingles using zinc clad nails, zinc starting piece, hip, zinc valleys, zinc ridge and hip pieces.

Johns-Manville, Inc., Madison Ave. & 41st St., New York, N. Y.

Johns-Manville Building Materials. Book. 8½ x 11 in. 100 pp. Illustrated. A comprehensive catalog of various types of roofing for all forms of construction. Details of wall, floor and ceiling insulation; asbestos wood for fireproof construction; waterproofing, etc.

Johns-Manville Asbestos Shingles. Booklet. 8½ x 11 in. 24 pp. Illustrated. This booklet is profusely illustrated in colors, showing some very artistic blends of asbestos shingles with various types of architecture. Contains many valuable suggestions for the architect.

Ludowici-Celadon Company, 104 So. Michigan Ave., Chicago, Ill.

"Ancient" Tapered Mission Tiles. Leaflet. 8½ x 11 in. 4 pp. Illustrated. For architects who desire something out of the ordinary, this leaflet has been prepared. Describes briefly our "Ancient" Tapered Mission Tiles, hand-made, with full corners and designed to be applied with irregular exposures.

Ruberoid Co., The (formerly the Standard Paint Co.), 95 Madison Avenue, New York, N. Y.

Instructions for Laying Built-up Roofs. Booklet. 8½ x 11 in. Illustrated.

Ruberoid Facts Worth Knowing. Booklet. 6 x 9 in. 16 pp. Illustrated.

Ruberoid Strip-shingle. Booklet. 3½ x 6¼ in. 16 pp. Illustrated in color.

Ruberoid Unit-shingle. Booklet. 3½ x 6¼ in. Illustrated in color.

United States Gypsum Company, 205 West Monroe St., Chicago, Ill.

Architectural Data Pyrobar Roof Construction. 8½ x 11 in. 48 pp.

SAFETY TREADS

Universal Safety Tread Co., 40 Court St., Boston, Mass.

The Universal Safety Metal Tread. Booklet. 8½ x 11 in. 16 pp. Illustrated. Describes Safety Treads, with lead inserts in steel base, suitable for use on iron, wood or concrete stairs. Also the flat type, with "Alundum" surface, as well as special ladder treads for ships, power-house and engine-room open string stairways.

SASH CHAIN

American Chain Company, Inc., Bridgeport, Conn.

American Sash Chain. Booklet. 3½ x 6 in. 8 pp. Illustrated. Describes and illustrates American Sash Chain and Sash Fixtures.

Smith & Egge Mfg. Co., The, Bridgeport, Conn.

Booklet. 6¾ x 9 in. 42 pp. Illustrated. Covers a complete line of chains, hardware and specialties.

SASH CORD

Samson Cordage Works, Boston, Mass.

Catalog. 3½ x 6¼ in. 24 pp. Illustrated. Covers complete line of rope and cord.

SCREENS

The Higgin Manufacturing Co., Newport, Ky.

Your Home Screened the Higgin Way. Booklet. 8½ x 11½ in. 13 pp. Illustrated in colors. Complete description of Higgin Screens, designed to meet every need.

Rolup Screen Company, 410 East 32nd Street, New York, N. Y.

Hastings Handbook of Window Screens. Booklet. 8 x 11 in. 16 pp Illustrated. Complete description, with illustrations and diagrams, of Rolup Screens, also specifications, prices and service to architects.

SEWAGE DISPOSAL

Kewanee Private Utilities, 442 Franklin St., Kewanee, Ill.

Specification Sheets. 7¾ x 10¼ in. 40 pp. Illustrated. Detailed drawings and specifications covering water supply and sewage disposal systems.

SHEATHING

Bishopric Manufacturing Co., 103 Este Ave., Cincinnati, Ohio

For All Time and Clime. Booklet. 6 x 9 in. 48 pp. Illustrated. Describing the use of Bishopric stucco base and Bishopric plaster base.

STEEL DRESSERS

Janes & Kirtland, 133–135 West 44th St., New York, N. Y.

The White House Line. Booklet. 7¾ x 5¼ in. 24 pp. Illustrated. Describes and illustrates in detail WHITE HOUSE Steel Dressers and some of the separate units. Also contains typical layout and list of some of our clients.

Photographs. 5½ x 3½ in. Views of actual installations in private residences, schools, etc., sent on request.

STONE, BUILDING

Harrison Granite Company, 200 Fifth Avenue, New York, N. Y.

Harrison Granite Company, Clientele. 3¾ x 8¾ in. 24 pp. Illustrated. A partial list of clients with illustrations of examples of monuments and mausoleums.

Indiana Limestone Quarrymen's Association, Box 766, Bedford, Indiana.

Volume 3. Series A-3. Standard Specifications for Cut Indiana Limestone work. 8½ x 11 in. 56 pp. Containing specifications and supplementary data relating to the best methods of specifying and using this stone for all building purposes.

Vol. 1. Series B. Indiana Limestone Library. 6 x 9 in. 36 pp. Illustrated. Giving general information regarding Indiana Limestone, its physical characteristics, etc.

Vol. 27. Series B. Designs for Houses of Indiana Limestone. 8½ x 11in. 32 pp. Illustrated. Being the best designs submitted in competition for a detached residence faced with Indiana Limestone conducted by *The Architectural Review*.

Volume 4, Series "B." Booklet. New Edition. 8½ x 11 in. 64 pp. Illustrated. Indiana Limestone as used in Banks.

Tompkins-Kiel Marble Company, 505 Fifth Ave., New York, N. Y.

Reproductions in natural colors of imported and domestic marbles and stone for interior and exterior uses.

Bulletins, 9¾ x 12¾ in., illustrating buildings of various types in which Tompkins-Kiel Marble Company's imported and domestic marbles and stone have been used

STORE FRONTS

Kawneer Co., The, Niles, Mich.

A Collection of Successful Designs. Catalog. 9¼ x 6½ in. 64 pp. Illustrated. Showing by use of drawings and photographs many types of Kawneer Solid Copper Store Fronts.

STUCCO

Bishopric Manufacturing Co., 103 Este Ave., Cincinnati, Ohio.

For All Time and Clime. Booklet. 6 x 9 in. 48 pp. Illustrated Describing the use of Bishopric stucco base and Bishopric plaster base.

STUCCO BASES

Bishopric Manufacturing Co., 103 Este Ave., Cincinnati, Ohio.

For All Time and Clime. Booklet. 6 x 9 in. 48 pp. Illustrated. Describing the use of Bishopric stucco base and Bishopric plaster base.

STUCCO, MAGNESITE

American Magnestone Corporation, Springfield, Ill.

Catalog. 13 pp. Describes the quality, beauty and strength of Magnestone.

American Materials Company, 101 Park Avenue, New York; Weed Street and Sheffield Avenue, Chicago, Ill.

Elastica, the Stucco of Permanent Beauty. Catalog. 8½ x 11 in. 32 pp. Illustrated. Treatise on composition and application of Elastica Stucco.

Muller & Co., Franklyn R., Waukegan, Ill.

Everlastic Magnesite Stucco. Booklet. 8½ x 11 in.

United States Materials Co., Weed Street and Sheffield Avenue, Chicago, Ill. See American Materials Co.

HANDINESS

THERE are fresh eggs and "just eggs." There are handy windows and "just windows."

Lupton Projected Sash are *handy*. They respond easily and smoothly to the push that opens, the pull that shuts. Use them constantly, and your clients' struggles with wood sash—that sometimes slide and sometimes stick—will become but a memory.

Despite their easy control, they fit snugly—far more snugly than their very moderate price would suggest. For the ventilators are double-weathered, and their mechanical movement permits them to be fitted to a close contact all around.

Because they are STEEL, their fit is *permanent*. There's no periodic refitting, no gradual slump into rattling or binding. They are an investment in good window-service.

Wherever possible, use the standard sizes. Their proportions and dimensions are correct for good window-service, and they cost much less than special sizes.

For offices—schools—hospitals—clubs—etc.,—where
easy control and protection against rain are desired

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*Warehouses in these cities.
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Lupton
INVESTMENT VALUE
Projected Sash

SELECTED LIST OF MANUFACTURERS' PUBLICATIONS — *Continued from page 80*

TERRA COTTA

National Terra Cotta Society, 1 Madison Avenue, New York, N. Y.

Standard Construction, Indexed, bound volume. 10½ x 16 in 90 pp. 70 Illustrations. Standard forms of terra cotta construction with short article.

"The School." 10½ x 13½ in. 34 pp. 92 Illustrations. Types of school buildings with short descriptive articles. Volume I, brochure series.

"Better Banks." 10½ x 13½ in. Illustrated. Banks of various sizes, with short descriptive articles.

"Terra Cotta Defined." 10½ x 13½ in. Complete description of Terra Cotta and its uses.

The New Jersey Terra Cotta Co., Singer Bldg., New York, N. Y.

Store Fronts in Architectural Terra Cotta. Booklet. 8½ x 11 in. 44 pp. Illustrated. Photographs, measured drawings, designs and illustrations of decorative motifs make up an interesting booklet which will be forwarded upon request.

Northwestern Terra Cotta Co., The, 2525 Clybourn Ave., Chicago, Ill.

Booklet. 8¼ x 11 in. 77 pp. Illustrated. Showing in a concise way the usefulness of terra cotta.

THERMOSTATS—See Heating Equipment

TILE, FLOOR AND WALL

Associated Tile Manufacturers, The, Beaver Falls, Pa.

Basic Information. Booklet. 7½ x 10⅝ in. 24 pp. Illustrated. Ask for booklet K-200.

A publication issued for architects, engineers and educators to acquaint them with methods of grading, derivation of sizes and shapes, variety of colors, kind of finishes, nomenclature and ingredients and processes insofar as they lead to a better understanding of the product and its uses.

Basic Specification and Related Documents. Booklet. 7½ x 10⅝ in. 38 pp. Ask for Booklet K-200.

The Basic Specification proper gives in detail the procedure to be followed with respect to any kind of tile installation in connection with practically every type of construction. The Related Documents or work sheets are designed to call attention to optional application methods and materials.

Swimming Pools. Booklet. 8½ x 11 in. 32 pp. Illustrated. Issued for the use of architects and engineers as a handbook on swimming pools and their construction.

Bringing the Crowds to Your Market. Booklet. 8½ x 11 in. 16 pp. Illustrated in color. Shows use of tile for the modern sanitary market.

B. Mifflin Hood Brick Co., Atlanta, Ga.

Burned Clay Products. Booklet. 9½ x 12½ in. 47 pp. Illustrated. Shows different uses of brick, but presents particularly the various uses of quarrie floor tile. Free to architects and engineers.

Stedman Products Company, South Braintree, Mass.

Six-page folder, 8½ x 10½ in., illustrated in colors, giving complete description of Stedman Naturized Flooring, Tiles, Wainscoting, Sanitary Bases, Stair Treads, etc. Technical data, recommendations and special flooring service.

The Vitrolite Company, 133 W. Washington St., Chicago, Ill.

Toilet Partitions and Wainscoting. Booklet. 8½ x 11 in. 32 pp. Illustrated. States comprehensive facts about Vitrolite, its adaptability and advantages as a slab material for wainscoting and toilet partitions, wall and ceiling surfacing, etc. Installations shown, with blue prints and architects' specification data.

Thoughts of Home. Booklet. 8½ x 11 in. 32 pp. Illustrated. Describes and shows practical application of Vitrolite and the artistic and economical results possible in its use in the home, for bathrooms, kitchen, pantry, etc.

TILE, HOLLOW

Hollow Building Tile Association, Dept. 1812, Conway Bldg., Chicago, Ill.

Handbook of Hollow Building Tile Construction. 8½ x 11 in 104 pp. Illustrated. Complete treatise on most approved methods of hollow tile building construction and fireproofing.

National Fire Proofing Co., 250 Federal St., Pittsburgh, Pa.

Standard Wall Construction Bulletin 174. 8½ x 11 in. 32 pp. Illustrated. A treatise on the subject of hollow tile wall construction

Industrial Housing Bulletin 172. 8½ x 11 in. 14 pp. Illustrated Photographs and floor plans of typical workingmen's homes.

Natco on the Farm. 8½ x 11 in. 38 pp. Illustrated. A treatise on the subject of fire safe and permanent farm building construction

Fireproof Buildings of Natco Hollow Tile. Booklet. 8½ x 11 in 16 pp. Illustrated. Showing the use of Natco Hollow Tile for private residences.

VACUUM CLEANING APPARATUS

The Spencer Turbine Company, Hartford, Conn.

Vacuum Cleaning Apparatus for all purposes. Booklet. 32 pp. Illustrated. Complete information on product, showing prominent buildings equipped with this system.

VALVES

Crane Co., 836 S. Michigan Ave., Chicago, Ill.

No. 50 Steam Pocket Catalog. 4 x 6½ in. 775 pp. Illustrated Describes the complete line of the Crane Co

Gorton & Lidgerwood Company, 96 Liberty St., New York, N. Y.

Gorton Quarter-Turn Packing-Lock Valves. Booklet. 4¼ x 7¼ in. 32 pp. Illustrated. Describing a new type of valve for all systems of steam, hot water and vacuum heating.

Jenkins Bros., 80 White Street, New York.

The Valve Behind a Good Heating System. Booklet. 4½ x 7¼ in. 16 pp. Color plates. Description of Jenkins Radiator Valves for steam and hot water, and brass valves used as boiler connections.

Jenkins Valves for Plumbing Service. Booklet. 4½ x 7¼ in. 16 pp. Illustrated. Description of Jenkins Brass Globe, Angle Check and Gate Valves commonly used in home plumbing, and Iron Body Valves used for larger plumbing installations.

VENETIAN BLINDS

Burlington Venetian Blind Co., Burlington, Vt.

Venetian Blinds Booklet. 4½ x 7½ in. 32 pp. Illustrated. Describes the "Burlington" Venetian blinds, method of operation, advantages of installation to obtain perfect control of light in the room.

The J. G. Wilson Corporation, 11 East 36th St., New York, N. Y.

Wilson Venetian Blinds and Awnings. Booklet. 6 x 9 in. 32 pp. Illustrated. Shows typical application of these light-regulating devices.

VENTILATION

Clarage Fan Company, Kalamazoo, Mich.

Catalog No. 52. 8½ x 11 in. 84 pp. Illustrated. Describes Clarage Kalamazoo Multiblade Fans and Heaters for use in schools, churches, hospitals and industrial plants. Engineering data, capacity tables and dimensions included.

WALL BOARDS

Carey Co., The Philip, Cincinnati, Ohio.

Carey Board for Better Building. Catalog. 6 x 9 in. 32 pp. Illustrated.

United States Gypsum Company, 205 West Monroe St., Chicago, Ill.

Walls of Worth. Booklet. 8½ x 11 in. 24 pp. Illustrated. Describes Sheetrock, the fireproof wall board, its advantages and uses.

WARDROBES

W. L. Evans, 700 Block E, Washington, Ind.

Pictures That Talk. Catalog. 8½ x 11 in. 16 pp. Illustrated. Wardrobes, in units, with Evans Vanishing Doors, for schools, hospitals, hotels, office buildings and homes.

WATER HEATERS

Ruud Manufacturing Co., Pittsburgh, Pa.

Ruud Gas Water Heaters. Bulletins in filing folder describing instantaneous automatic water heaters for small homes and special uses, multi-coil automatic storage systems, automatic storage systems and tank water heaters. Details for connections, hot water service and specifications. 19 pp. Illustrated. 8½ x 11 in.

Ruud Automatic Storage Systems. Catalog of automatic hot water storage systems for domestic, industrial and commercial uses. Details, capacities, dimensions and other data. 24 pp. Illustrated. 6 x 9 in.

Ruud Multi-Copper-Coil Automatic Storage Systems. Catalog describing automatic hot water storage systems of large capacity for large residences, apartment buildings, hotels, hospitals, gymnasiums and factories. Details, capacities and dimensions for complete line. 32 pp. Illustrated. 6 x 9 in.

WATERPROOFING

The General Fireproofing Company, Youngstown, Ohio.

Waterproofing Series A–507–9. Booklet. 8½ x 11 in. 42 pp. Illustrated. Thoroughly covers subject of waterproofing concrete, wood and steel preservatives, dustproofing and hardening concrete floors, and accelerating the setting of concrete.

Ruberoid Co., The, 95 Madison Ave., N. Y.

Impervite. Circular. 8½ x 11 in. 4 pp. Illustrated. An integral waterproofing compound for concrete, stucco, cement, mortar, etc.

Sandusky Cement Co., Dept. F., Cleveland, Ohio.

Medusa Waterproofing. Booklet. 6¾ x 9 in. 38 pp. Illustrated.

Sonneborn Sons, Inc., L., 116 Fifth Ave., New York.

Pamphlet. 3¾ x 8¾ inches. 8 pp. Explanation of waterproofing principles. Specifications for waterproofing walls, floors, swimming pools and treatment of concrete, stucco and mortar.

WATER PURIFIERS

Wallace & Tiernan Company, Newark, N. J.

Protecting N. Y. Water Supply. Booklet. 10 x 7 in. 24 pp. Illustrated. Describes the chlorinating equipment used for sterilizing N. Y. City water supply; also equipment suitable for sterilizing water supplies of municipalities, industrial plants, private residences, etc.

WATER SOFTENERS

Permutit Company, The, 440 Fourth Ave., New York, N Y

Permutit-Water softened to No (Zero) Hardness. Booklet 8½ x 11 in. 32 pp Describing the original Zeolite process of softening water to zero hardness. An essential for homes, hotels, apartment houses, swimming pools, laundries, textile mills, paper mills, ice plants, etc., in hard water districts.

WEATHER STRIPS

The Higgin Manufacturing Co., Newport, Ky.

Higgin All-Metal Weather Strips. Booklet. 6 x 9 in. 12 pp. Illustrated in colors. Describes various types of Higgin Weather Strips for sealing windows and doors against cold and dust.

WINDOW HARDWARE, CASEMENT

Hoffman Mfg. Co., Andrew, 900 Steger Bldg., Chicago, Ill.

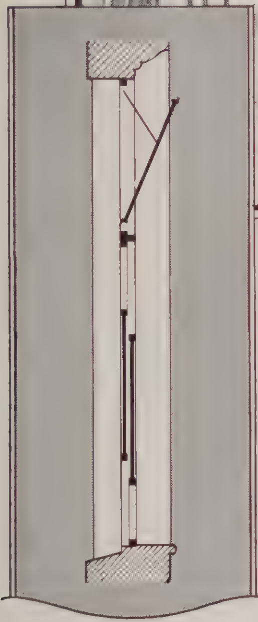
Hoffman Casement Fixtures. Architects' Portfolio. 8½ x 11 in. 30 pp. Loose-leaf. Scale details for mill-work, installation, etc., in new and old work.

Richards-Wilcox Mfg. Co., Aurora, Ill.

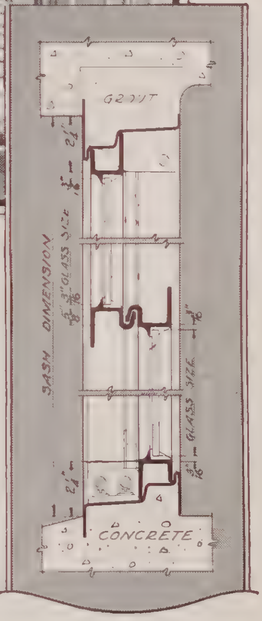
Casement Window Hardware. Booklet. 24 pp. 8½ x 11 in. Illustrated. Shows typical installations, detail drawings, construction details, blue-prints if desired. Describes AiR-Way Multifold Window hardware.

ARCHITECTURAL FENESTRA

Joseph Sullivant High School at Columbus, Ohio, equipped with Architectural Fenestra of the Counter-balanced Type. Howell and Thomas, Architects.



Vertical Cross Section of Joseph Sullivant High School installation, showing Fenestra Counter-balanced Windows with structural horizontal mullions surmounted by opening-in transoms.



Vertical Cross Section of Fenestra Counter-balanced Window showing construction at head, sill and meeting rail.

A TYPE of Architectural Fenestra which is gaining wide recognition because of its many advantages is Fenestra Counter-balanced Windows.

These windows being counter-balanced over roller bearing pulleys, provide scientific top and bottom ventilation. Bronze weathering sections on either side of the ventilator increase the ease of operation. Flaring channel guides at the ventilator jambs and long, overlapping members at head and sill insure positive weathering. Shades may be attached close to the windows and screens are easily fitted on the outside.

In the Joseph Sullivant High School, Columbus, Ohio, shown above, the 50% ventilated units are used in pairs with structural horizontal mullions surmounted by transoms.

Our Sales Engineers located in all the leading cities will be glad to go over your window requirements with you and show you how this type of Architectural Fenestra may be made to harmonize with the highest type of construction.

DETROIT STEEL PRODUCTS COMPANY
Division of Architectural Construction
2401 East Grand Boulevard Detroit, Mich.

Fenestra

SELECTED LIST OF MANUFACTURERS' PUBLICATIONS — *Continued from page 82*

WINDOWS, CASEMENT

Crittall Casement Window Co., 2703 East Atwater Street, Detroit, Mich.

Catalog No. 18. 9 x 12 in. 56 pp. Illustrated.

Hoffman Mfg. Co., Andrew, 900 Steger Bldg., Chicago, Ill.

Hoffman Casements. Architects' Portfolio. 8½ x 11 in. 30 pp. Looseleaf. Scale details for mill-work, installation, etc., in new and old work.

Hope & Sons, Henry, 103 Park Avenue, New York.

Catalog. 12¼ x 18½ in. 30 pp. Illustrated. Full size details of outward and inward opening casements.

International Casement Company, Jamestown, N. Y.

International Casements. Catalog. 8½ x 11 in. 224 pp. Illustrated. Valuable book, containing photographs and measured drawings of all types of buildings, showing casement windows.

David Lupton's Sons Co., Allegheny Ave. and Tulip St., Philadelphia, Pa.

Casements and Double Hung Windows. Catalog. 8½ x 11 in. 44 pp. Illustrated. Shows new Lupton Casements and Double Hung Windows, with profuse illustrations and full details.

WINDOWS, STEEL and BRONZE

Detroit Steel Products Company, Detroit, Mich.

Fenestra Basement Windows. Booklet. 3⅝ x 6¼ in. 16 pp. Illustrated. Describes steel basement windows, their advantages, details and specifications for installation.

Fenestra Reversible Ventilator Windows. Booklet. 8½ x 11 in. 20 pp. Illustrated. Describes the details of this new model window, as well as the variety it offers for attractive architectural design.

Fenestra Counter-Balanced Windows. Catalog. 8½ x 11 in. 111 pp. Illustrated. Details and specifications are thoroughly covered in the Fenestra General Catalog.

Fenestra Industrial Window Walls. Catalog. 8½ x 11 in. 111 pp. Illustrated. Details and specifications, with photographic illustrations, are thoroughly covered in the Fenestra General Catalog.

The Kawneer Company, Niles, Mich.

Kawneer Simplex Windows. Catalog. 8½ x 10½ in. 16 pp. Illustrated. Complete information, with measured details, of Kawneer Simplex Weightless Reversible Window Fixtures, made of solid bronze. Shows installations in residences and buildings of all sorts.

Detail Sheets and Installation Instructions. Valuable for architects and builders.

David Lupton's Sons Co., Allegheny Ave. and Tulip St., Philadelphia, Pa.

Lupton Service—Products No. 11. Book. 8½ x 11 in. 192 pp. Illustrated. The full line of Lupton products described and illustrated. Separate chapter on Designing Service. Many new types of steel sash for apartments, hotels, etc., shown.

WINDOWS, STEEL and BRONZE—Continued

David Lupton's Sons Co.—Continued

Catalog No. 110. 8½ x 11 in. 72 pp. Illustrated. A condensed version of the No. 11 or general catalog. The new Lupton Projected Sash completely described.

Air and Light in Machine Shops. Booklet. 6 x 9 in. 42 pp. Illustrated. The proper building layout and selection of the right types of steel sash for best results in daylighting and ventilating in machine shops.

Truscon Steel Company, 250 W. Lafayette Blvd., Detroit, Mich.

Truscon Steel Windows. Catalog. 8½ x 11 in. 80 pp. Illustrated. Contains complete data on all types of Truscon Steel Windows.

WOOD

American Walnut Mfrs. Association, 618 So. Michigan Blvd., Chicago, Ill.

American Walnut. Booklet. 7 x 9 in. 45 pp. Illustrated. A very useful and interesting little book on the use of Walnut in Fine Furniture with illustrations of pieces by the most notable furniture-makers from the time of the Renaissance down to the present.

Real American Walnut Furniture. Folder. 8½ x 11 in. 4 pp. Illustrated. Tells how to identify the genuine and avoid the substitute in buying "Walnut" furniture.

Pacific Lumber Company, 332 So. Michigan Ave., Chicago, Ill.

California Redwood. Booklet. 9 x 12 in. 36 pp. Illustrated. Describes in a general way the production, manufacture and various uses of California Redwood.

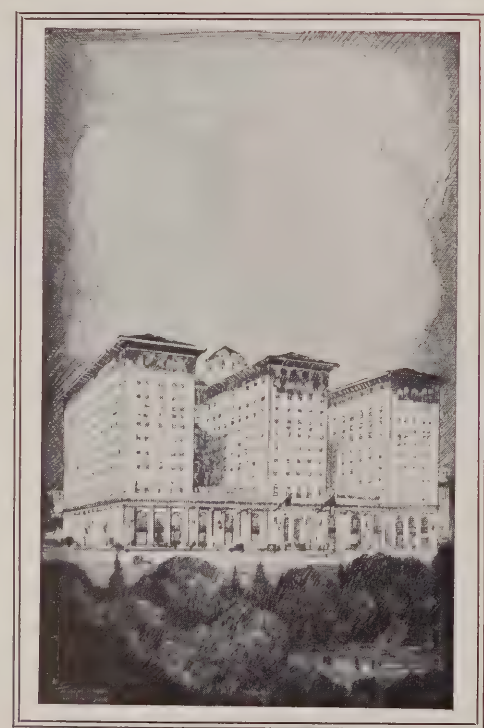
Redwood Construction Digest. Booklet. 8½ x 11 in. 16 pp. Illustrated. Redwood and its Uses in the Construction Field. Contains specifications and other information of interest to architects and builders generally.

Curtis Companies Service Bureau, Clinton, Iowa

Architectural Interior and Exterior Woodwork, Standardized. Book. 9 x 11½ in. 240 pp. Illustrated. This is an Architects' Edition of the complete catalog of Curtis Woodwork, as designed by Trowbridge & Ackerman. Contains many color plates.

Better Built Homes, Vols. XV–XVIII incl. Booklet. 9 x 12 in. 40 pp. Illustrated. Designs for houses of five to eight rooms, respectively, in several authentic types, by Trowbridge & Ackerman, architects, for the Curtis Companies.

Keeping Down the Cost of your Woodwork. Booklet. 6¾ x 9¼ in. 16 pp. Illustrated. Described the advantages of the use of stock woodwork of good design, with suggestions for interior treatment throughout the house.



The new Los Angeles Biltmore Hotel, Los Angeles, Calif.—equipped with a Pfaudler Glass Lined Laundry Chute and a Pfaudler Rubbish Chute (unenameled)

Your plans will not be complete

—unless you specify the Pfaudler Glass Lined Laundry Chute. This is the common opinion of architects all over the country, especially architects who do a preponderance of hospital and hotel work. Laundry disposal is so fraught with every possible measure of inconvenience, germ-transmission and labor-cost that a device which will automatically eliminate these difficulties is welcomed. Hence, the popularity of the Pfaudler Chute. *Send for new descriptive booklet*

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Send me, without obligation, your newly printed brochure describing the Glass Lined Steel Laundry Chute.

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GLASS LINED LAUNDRY CHUTE

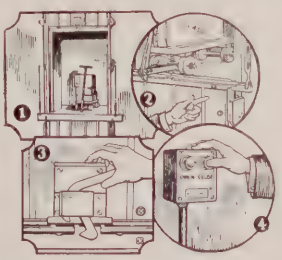
Lord & Taylor Building
Starrett & Van Vleck Architects

Freight Elevator Doors of the highest standard

IN keeping with the high standard of the Lord & Taylor Building on New York's Fifth Avenue, Peelle Doors were specified for the freight elevator enclosures. It was the architects belief that Peelle Doors would meet the most exacting demands in utility and service.

They believed that the construction of Peelle Doors would give long, uninterrupted service. They understood that the truckable feature would save breakage in truckage, that the counterbalanced, vertical operation would increase speed and efficiency, by allowing full clearance for loading and unloading. They knew Peelle Doors were fire-proof and accident proof.

Send for a copy of the Peelle catalog or for a Peelle representative. Know why you should specify PEELLE for your clients! Both services are yours for the asking.



1. Vertical operation allows full clearance.
2. Exclusive truckable features insures smooth trucking.
3. Easily operated by hand.
4. Operated electrically by pressing button.

PEELLE Freight Elevator DOORS

Counterbalanced-Truckable

THE PEELLE COMPANY · · · Brooklyn, N. Y.
Boston · Cleveland · Philadelphia · and 12 other cities

Elkhorn Public School, Elkhorn, Wis.

Illinois Zinc Shingles Are Ideal For School Roofing

Here are a few of the reasons why we have taken the liberty of making this statement to architects:

1. **Illinois Zinc Shingles will not crack.** School roofs, more than other roofs, require protection against thrown stones, baseballs, etc.

2. **They cost less** than any other roofing material of maximum durability. There are only a very few roofing materials as durable, everlasting and as economical as pure zinc.

3. **They harmonize perfectly** with every style of architecture. Their natural, soft gray beauty lends charm and dignity to the roof of any building they cover. And the longer they are exposed, the more beautiful they become.

4. **They require no painting** either for decorative purposes or protection. Many other roofing materials have to be painted from time to time to prevent rust and deterioration, or to revive their faded color, thereby adding to their original cost.

5. **There is absolutely no maintenance** on a roof of Illinois Zinc Shingles, for either repairs or painting. These extraordinary zinc shingles will long outlast the building they protect. This fact has been proved by the thousands of pure zinc roofs on some of the finest buildings in Europe and America; many of them are, today, from fifty to over one hundred years old and have never needed repairing.

6. **They are fire-proof and water-tight,** two features that every school architect will recognize as important in school roofing.

Before you specify the roofing material for your next school buildings, let us send you samples and detailed information about our Illinois Zinc Shingles.

ILLINOIS
ZINC SHINGLES
"THE ROOF THAT'S ALWAYS NEW"

ILLINOIS ZINC COMPANY
332 So. Michigan Avenue, Chicago, Ill.
280 Broadway, New York City
1331 Filbert Street, Philadelphia, Pa.
Smelters and Rolling Mills, Peru, Ill.
Established 1870

Corrugated Zinc Sheets for Roofing and Siding—Illinois Zinc Shingles—Strip or Ribbon Zinc—Slab Zinc (Spelter)—Wide Zinc Sheets. Producers of Electrolytic Slab Zinc, guaranteed 99.99% pure zinc. The highest grade of Slab Zinc produced in the world.

Use
PLATE
Glass

©

A well-planned house deserves it

A WELL-PLANNED house, the pride of its owner and designer, deserves nothing less than plate glass in its windows. Plate glass makes all the difference in the world in appearance. It lifts the moderate-priced house out of the commonplace, while ordinary glass may be a jarring note in the artistic effect of any house.

There is as much difference between plate glass and ordinary glass as there is between a highly polished mahogany panel and a rough-sawed, unfinished pine board.

Plate glass is worked, rubbed and polished with the same care and skill as the mahogany panel. To its perfectly smooth surfaces and crystal-clear body is due its brilliance and the rich effect it produces in dwellings, office-buildings, hotels, apartment houses, and school buildings.

Plate glass is the optically perfect glass for windows. It transmits practically 100 per cent of the light. Objects seen through it are clear-cut and distinct. There are no waves or swirls to distort the view.

Comparative figures on the glazing of any building show a surprisingly small difference in cost between plate glass and common sheet glass. Yet the same difference, applied to any other class of materials, will not go as far in improving the appearance of the building. Plate glass makes a building more rentable or saleable. In many cases it is the deciding factor.

PLATE GLASS MANUFACTURERS *of* AMERICA

Genuine
PLATE GLASS
MADE in U.S.A.

Use Plate Glass for:

- Desk Tops
- Counter Tops
- Windshields
- Closed Car Windows
- Vestibule Doors
- French Doors

Nothing Else is Like it

©

Perfecting the Use of
Two-Inch Solid Partitions

One Unit of Garden Apartment Group at Jackson Heights, N. Y.
G. H. Wells, Architect
Space-saving Interior Partitions of Two-inch Metal Lath and Plaster

FOR approximately thirty years the use of the 2″ solid partition has been standard construction practice in large buildings. During this period various practical considerations have affected the popularity of this type of partition among architects. Before the rise in building costs which first became evident in 1915 it was possible to build a thicker hollow partition in direct cost competition with the 2″ solid partition and for that reason the 2″ solid wall has not been an important factor.

During recent years, however, the increased cost of building construction and the greatly increased value of rentable space has enforced more careful consideration of plan efficiency, particularly from the viewpoint of space saving. Investors in hotel and apartment buildings have realized that such projects demand rooms of minimum size if they are to prove commercially successful and it has also been shown that such buildings containing large rooms are usually commercial failures, unless constructed during the time of low building cost.

The architect has been called upon to use every form of ingenuity at his disposal for the purpose of creating in his plans a greater amount of rentable space and wherever possible to decrease the first investment cost. This general condition has again focused attention on the 2″ solid partition and today a large number of apartments, office buildings and other large structures are being designed with such partitions throughout or at least in partial use for the division of space. Such notable developments as the apartment buildings of the Queensboro Corporation at Jackson Heights and the Allerton Hotels have made use of this practical space saving method of construction. Based on figures obtained from the plans of these buildings it is evident that the use of 2″ solid partitions provides an increase of from three to five per cent of the usable floor space and reversely if buildings are primarily designed with the use of the 2″ solid partition in mind it is possible to develop the same amount of floor space with a saving in construction cost.

One of the perplexing problems which has always confronted architects when considering the use of 2″ solid partitions is that of the electrical wiring and devices. It is usually necessary to install such devices in partitions and at no time has a complete line of electrical wiring devices been fully developed to meet this need until the recent perfection of the ARROW "SHALLO LINE."

These shallow devices completely solve the problem of electrical equipment as they have been designed under careful engineering supervision to remove all difficulties and objections incidental to the older types of equipment.

This complete standardized line of wiring devices for shallow partitions is described on the opposite page.

THE ARROW ELECTRIC COMPANY

Hartford, Connecticut

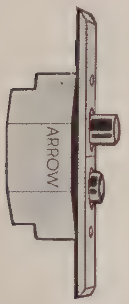
Boston New York Syracuse Pittsburgh Baltimore Chicago New Orleans Kansas City San Francisco

ARROW

SHALLO LINE

of
Electrical Wiring Devices

Typical Tumbler Switch



Typical Push Button Switch

THIS latest addition to the comprehensive ARROW line of electrical wiring devices has been developed to meet the growing demand for shallow partitions as described on the opposite page.

The ARROW SHALLO LINE comprises all types of electrical wiring devices for 2″ walls including:

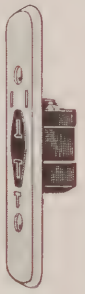
Tumbler switches of all types, all threaded to take the ARROW Glo-Tip if luminous switches are desired. Push button switches of all types and in lock and luminous styles. Convenience outlets both single and duplex for plugging in connections. Elexits, the new type of receptacle for fixture attachments. Bull's Eye receptacles for signal indications either separately or in gangs with switches and receptacles.

A number of these devices together with methods of installation are illustrated on this page.

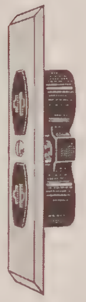
A number of outlet box manufacturers have developed 1½″ boxes to take the ARROW SHALLO LINE so that a complete electrical service for shallow partitions is now available.

The Arrow Electric Company has just issued a Manual of electrical wiring devices in 2-inch solid partitions and other installations for use in limited space. This Manual provides detailed drawings showing the construction of various types of 2-inch partitions and the proper method of installing electrical wiring devices. The Manual is available to architects upon written application.

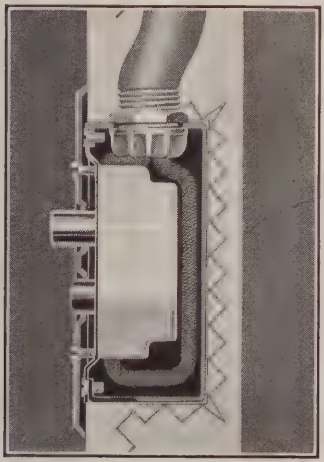
Single Convenience Outlet



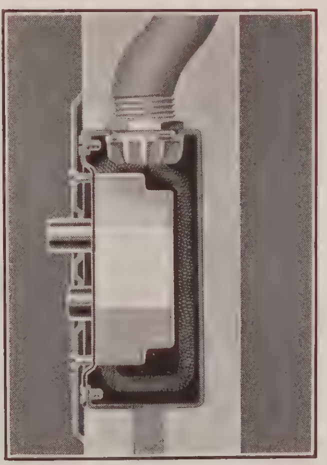
Side Wall "Elexit" Receptacle



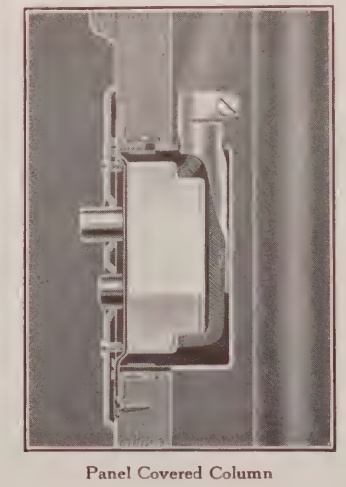
Duplex Convenience Outlet



2-inch Solid Partition Metal Lath Construction



2-inch Solid Partition Plaster Board Construction



Panel Covered Column

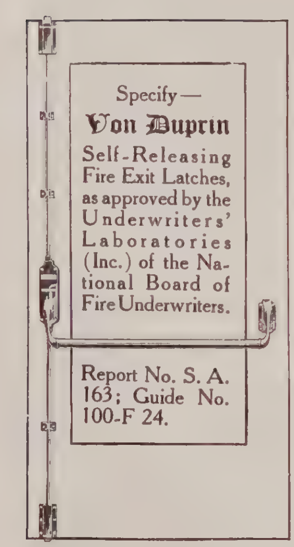
THE ARROW ELECTRIC COMPANY

Hartford, Connecticut

Boston New York Syracuse Pittsburgh Baltimore Chicago New Orleans Kansas City San Francisco

Von Duprin

Self-Releasing Fire Exit Latches



Specify—
Von Duprin
Self-Releasing Fire Exit Latches, as approved by the Underwriters' Laboratories (Inc.) of the National Board of Fire Underwriters.

Report No. S. A. 163; Guide No. 100-F 24.

The Reason

THERE is, after all, just one reason why **Von Duprin** Self-Releasing Fire Exit Latches should be put on the doors of schoolhouses, theaters, factories, and all other buildings housing large numbers of people.

That reason is that **Von Duprin** latches serve the purpose of safeguarding the inmates—of assuring safe exit at all times—of reducing the danger of loss of life or limb during a fire or panic—better than any other device yet discovered.

In the minds of an ever-increasing number of architects and building owners, this is sufficient reason for demanding the installation of genuine **Von Duprin** latches.

Ask us for Catalog 12-F, or see "Sweet's," pages 1323–1327.

VONNEGUT HARDWARE Co.
Indianapolis, Ind.

William N. Byers Junior High School, Denver, Colorado *William N. Bowman Co., Architects*

SARGENT HARDWARE

Virginia Trust Company
Richmond, Va.

B. J. Bossom
Architect

A. B. Clarke & Son Hardware Company, Hardware Contractors

Of the many items or details which contribute materially to the artistic success and practical utility of buildings it is doubtful if any are of greater importance than the finishing hardware. Where

SARGENT

LOCKS AND HARDWARE

are selected the most has been made of this fact or condition.

SARGENT & COMPANY

Manufacturers

NEW HAVEN — CONNECTICUT

NEW YORK CHICAGO

SARGENT HARDWARE is sold in all cities by representative dealers

THE EAGLE SASH PULLEY—Manufactured to fill the demand for low-priced steel sash pulleys with screwed face plates

A Line of Sash Pulleys That Meet the Requirements of Every Type of Building

THE use of the most expensive lacquered bronze sash pulleys turning on roller or ball bearings is not warranted in every type of dwelling nor in every building, but every structure, regardless of the purpose for which it is used, deserves sash pulleys that will turn freely, that will hold cord or chain in the groove without cutting, binding or sticking

AMERICAN Sash Pulleys are made in a variety of types to fit every builder's requirements. Many grades cost no more than ordinary cast iron pulleys, although they are stronger and lighter and will wear longer.

AMERICAN Sash Pulleys are made of pressed steel, or other metal, electrically welded and so designed that the cord or chain cannot "climb" or bind. All types are created to protect from rust.

Write for catalog, samples or both

The American Pulley Co.

Manufacturers of Steel Split Transmission Pulleys, Steel Sash Pulleys and Pressed Steel Shapes

4200 Wissahickon Avenue
Philadelphia, Pa.

AMERICAN
SASH
PULLEYS

Sixteen years' manufacturing experience—
A completely equipped plant—
Nation-wide distribution—

Every facility of this institution, backed by our reputation and resources, is at the service of the architect to insure his satisfaction and the satisfaction of his clients in the use of Monarch products.

MONARCH CASEMENT HARDWARE removes the last objection to casement windows. The *Monarch Control Lock*, for outswinging windows, fits under or over stool—locks securely at any angle—no interference with screens. The *Monarch Automatic Stay* is designed for both out and inswinging casements, and for transoms and pivoted windows. The *Monarch Check* has same uses as stay and ideally serves such other openings as window-seats, cabinets, chests, doors, etc.

Literature descriptive of Monarch products conforms strictly to A. I. A. standards in character of copy, sizes and classifications.

MONARCH METAL PRODUCTS COMPANY
5000 Penrose St. St. Louis, Mo.

MONARCH
METAL WEATHER STRIPS
CASEMENT HARDWARE

"Giant Metal," "Red Metal" and Steel

SASH CHAINS

Atlantic Refining Bldg., Philadelphia, Pa.

30,000 FEET
of our
No. 2 RED METAL
SASH CHAIN
Used for hanging the windows in this building

OUR CHAINS HAVE PROVEN VERY POPULAR IN SCHOOLS, HOSPITALS, POST OFFICES, HOTELS, LIBRARIES AND OTHER PUBLIC BUILDINGS

Why not use the best?

See Page 1191, Sweet's Catalog

SASH CHAIN BOOKLET ON REQUEST

The Smith & Egge Mfg. Co.
BRIDGEPORT, CONN.
ORIGINATORS OF SASH CHAINS

ARCHT. DE FORD SMITH
ATLANTA GA

SKETCH OF MISSION TILE ROOF
SHOWING CONCEALED GUTTER

Riviera Roofing Tile

Reminiscent of Old Spain

Presenting a truly interesting ruggedness of roof texture, and substantial balanced weight, together with a soft autumn foilage range of natural burned fireflashed shades—thoroughly vitrified, impervious to weather conditions, and true to type.

Samples and data cheerfully furnished

B·Mifflin Hood Brick Company
Burned Clay Products
Atlanta Ga

MISSISSIPPI - WIRE - GLASS - CO.
MWG
FIRE RETARDANT No 32
SAMPLES FILED WITH ARCHITECTS SAMPLES CORPORATION NEW YORK CITY

BANKERS TRUST COMPANY BUILDING
Trowbridge & Livingston, Architects
Marc Eidlitz & Son, Contractors

A MONUMENT OF QUALITY
Mississippi Wire Glass installed exclusively

MISSISSIPPI WIRE GLASS CO.
220 Fifth Avenue, New York
St. Louis **Chicago**

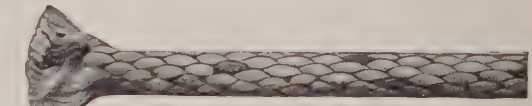
THE CUTLER MAIL CHUTE

Made in our own factory. Installed by our own experienced erectors, insuring uniform high quality and prompt completion. Estimates and full data on request.

No. 2947
Illustration shows Special Residence Mail Box. Size 12" x $6\frac{1}{4}$" x $3\frac{1}{2}$". Send for description and price.

CUTLER MAIL CHUTE CO.
OFFICES AND FACTORY
ROCHESTER, N. Y.

Samson Spot Sash Cord



Trade Mark Reg. U. S. Pat. Off.

Made of extra quality stock, carefully inspected, and guaranteed free from all imperfections of braid or finish. Can be distinguished at a glance from common cord by our trade mark, the Colored Spots.

Samson Wire Center Sash Cord

Trade Mark Reg. U. S. Pat. Off.

For heavy windows, or where for any reason a metallic device is required. A special quality enameled steel wire cable, with a braided cotton cover of the same quality as Spot Sash Cord with the same trade mark. Many times more durable than unprotected metallic devices, noiseless and attractive in appearance. Send for tests, samples and full information.

Samson Cordage Works
Boston, Mass.

Arrange the Partitions
as You want them—

Type No. 72
Single hung from center of each alternate door. No track or guide required in floor. For Accordion Doors.

Type No. 402
Doors hung from edge. With roller floor guide. For doors folding to one side of partition.

Type No. 405
Doors hung from edge. To roll on floor track and guided above. Used where head room is limited.

IN designing churches, schools, hotels and public buildings generally where accordion doors or folding partitions are required to close wide openings, the question of a practical layout of these doors is many times vexing.

It is our firm belief, based on evidence and a quarter of a century of experience, that McCabe Hangers are the solution for Folding Door problems. Our staff will be glad to assist you.

So we simply say: "Arrange the Partitions as *you* want them, and—write in your specification 'McCabe Hangers'."

There are many types of McCabe Hangers, but each is built to an equal high standard and is simple, strong—and in operation, smooth and quiet.

McCABE
HANGER MANUFACTURING COMPANY
425-27 West 25th St. New York, N. Y.

WALLS OF STRENGTH

Cracked and falling plaster and stucco is but the inevitable result of poor and therefore costly construction.

As ordinarily applied, plaster and stucco is held in place by means of "keys."

"Keys" are that quantity of plaster or stucco forced through the openings provided between or in the lath or base in order to hold in place, **over the face of the lath,** the specified amount of material.

"Keys" therefore, add nothing to the strength of the slab, and the quantity of plaster or stucco used to form the "keys" would be actually wasted if there were another and better way to hold it in place.

And there **is** a way to insure permanent interior plaster walls and ceilings, and exterior stucco walls; namely, by **reinforcing** them.

National Stucco-Plaster Reinforcement introduces a new chapter in **permanent** ceiling and wall construction. It is a combined **reinforcement** and base which does not rely on fragile "keys" to hold the plaster or stucco in place; its net-work of galvanized, electrically-welded, cold-drawn steel wire (which develops more than 60,000 pounds per square inch tensile strength) becomes an integral part of and thoroughly embedded in the material, and thereby **insures** truly reinforced, monolithic, permanent walls and ceilings.

The cost of National Stucco-Plaster Reinforcement per room completely plastered is but little more than the cost of ordinary but non-the-less primitive and inferior wood lath construction. It is cheaper, in place, than other Stucco laths and bases.

When building, insist on the use of National Stucco-Plaster Reinforcement—aside from its reinforcing value, it is the best and cheapest insurance you can carry on your walls and ceilings.

Carried in stock by local dealers

Write for literature, samples and prices

National Steel Fabric Company
(Subsidiary of Pittsburgh Steel Company)
710 Union Arcade Pittsburgh, Pa.

Southern Pacific Lines' Paint Shop, Houston, Texas, roofed for permanence with Federal Interlocking Tile and flooded with daylight through the use of Federal Glass Tile

Why put *temporary* roofs on *permanent* buildings?

ROOFS are constantly repaired or replaced on buildings that are otherwise as sound as the day they were built. And every dollar spent for replacing these destructible roofs is an unanswerable argument for the economy of Federal Cement Tile—"the *indestructible* roof."

Thousands of Federal Roofs are proving this in every part of the industrial world. As Federal Roofs grow older—as they outlast roofs that were *supposed* to be permanent—it becomes still more evident that there is only one form of roof that is permanent in the purest sense of the word.

Realization of this basic fact has led hundreds of the landmarks of industry to standardize on Federal. In this fireproof, acidproof, fumeproof roof these great firms have found a measure of ultimate saving that makes Federal Cement Tile the most economical roof in existence.

Made, Laid and Guaranteed by
Federal Cement Tile Co., 110 S. Dearborn St., Chicago
Works: Hammond, Indiana and Detroit, Michigan

FEDERAL Cement Tile
"The Roof for Permanence"

METAL LATH MAKES LUMBER

Ninety-Six Percent of Residence Fires

MANY otherwise thoughtful people completely neglect the fire protection of the interior of residences, notwithstanding the fact that almost all residential fires start on the interior.

One of the most prominent Fire Prevention Engineers in the country once stated that an ordinarily constructed masonry wall building was not very much more resistive than frame construction, because the spread of interior fires is just as rapid in the former as in the latter. Thinking architects do not delude themselves that they have made buildings fire-safe without built-in fire protection for the interior partitions and floors.

This information is inserted by the following

Kno-Burn XXth Century Econo Eureka Sheathing Lath
Corrugated Longspan Kno-Fur Accessories

NORTH WESTERN EXPANDED METAL CO.
1234 OLD COLONY BUILDING CHICAGO, ILL.

TRUSCON HY-RIB METAL LATH

Truscon Steel Company
Youngstown, Ohio

CONSTRUCTION FIRE-SAFE

Originate Within the Building Itself

EXPANDED Metal Lath and plaster will confine a severe fire to the room of origin for over one hour, as proved in the Underwriters' Laboratories tests. The same authority rates commonly used interior finishes at but four minutes' protection. With these facts thoroughly realized by the building profession, architects will not build fire-trap interiors to house their clients.

Besides its fire protection, Metal Lath provides practically crackproof walls and ceilings. The use of Expanded Metal Lath is an economy, reducing redecoration costs, and eliminating plaster cracks.

Write any of the companies listed below for the 5 Vulnerable Points in residential fire protection—the most effective protection with the least expenditure.

members of the Associated Metal Lath Manufacturers

Herringbone
RIGID METAL LATH
The General Fireproofing Company
Youngstown, Ohio

METAL LATH
Stops Fire—Prevents Cracks
ASSOCIATED
METAL LATH MANUFACTURERS

For Public *and* Institutional Buildings

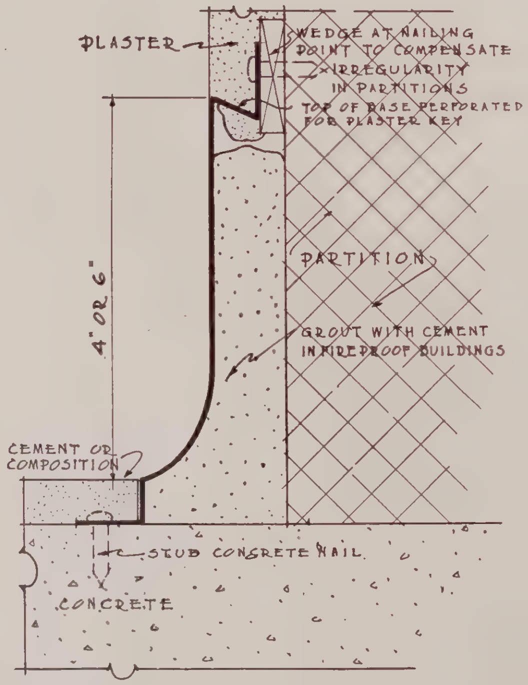
Knapp Sanitary Metal Base is not just another metal trim. It has distinctive features that make it an important part of any building.

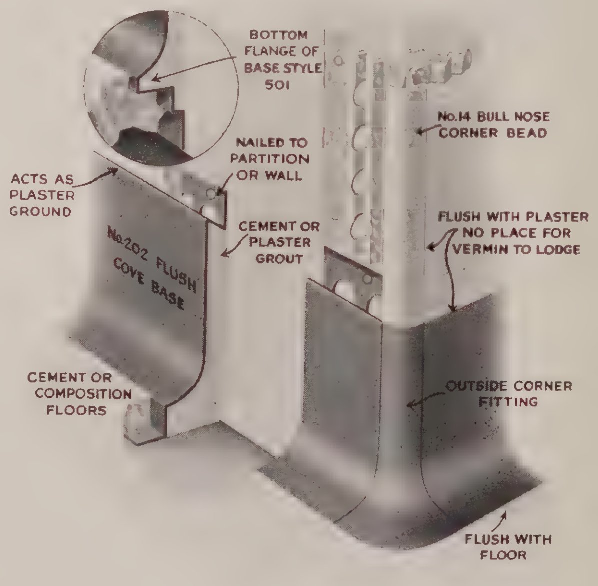
Consider these features—it finishes flush with the plaster, it is coved at the angle, finishes flush with the floor, there are cove fittings for the corners, and sanitary plinths at the doors.

It increases the fire protection materially, it is easy to clean, it will not shrink, warp or crack, and it adds to the appearance of a room. Write for our booklet describing Knapp Sanitary Metal Base. We will be glad to mail it to you.

Knapp Sanitary Metal Trim Products

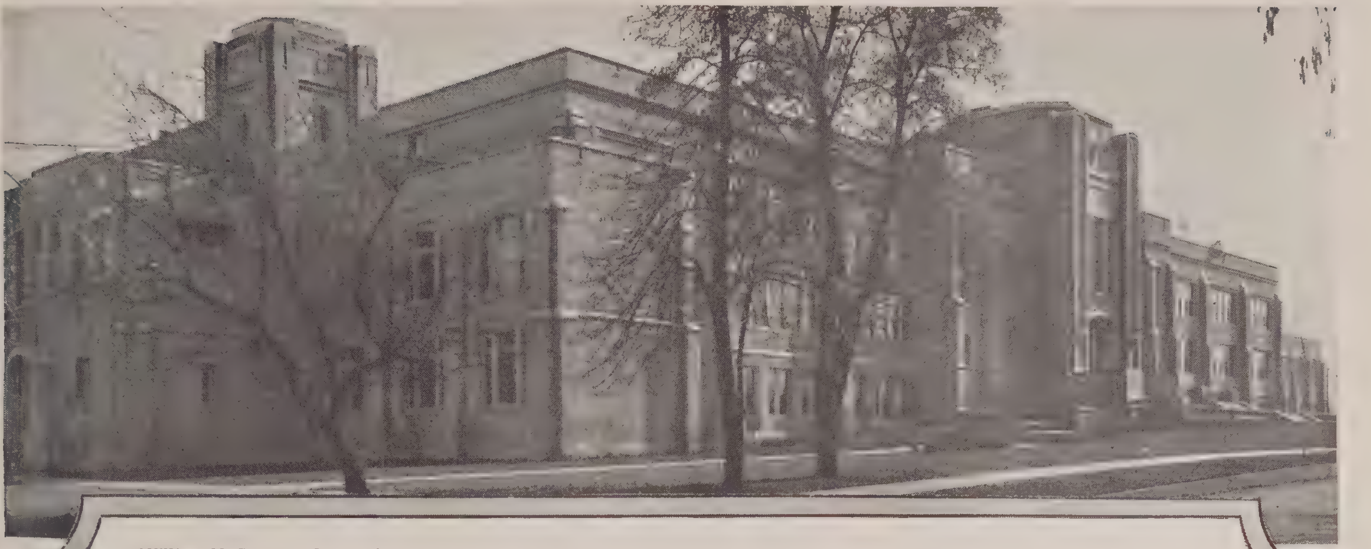
Flush Cove Base
Flush Door Casing
Flush Chair and Bed Rail
Concealed Picture Moulding
Bull-Nose Metal Corner Protector
Flush Window Trim


PLASTER
WEDGE AT NAILING POINT TO COMPENSATE IRREGULARITY IN PARTITIONS
TOP OF BASE PERFORATED FOR PLASTER KEY
4" OR 6"
PARTITION
GROUT WITH CEMENT IN FIREPROOF BUILDINGS
CEMENT OR COMPOSITION
STUD CONCRETE NAIL
CONCRETE


BOTTOM FLANGE OF BASE STYLE 501
No.14 BULL NOSE CORNER BEAD
NAILED TO PARTITION OR WALL
ACTS AS PLASTER GROUND
CEMENT OR PLASTER GROUT
FLUSH WITH PLASTER NO PLACE FOR VERMIN TO LODGE
No.202 FLUSH COVE BASE
CEMENT OR COMPOSITION FLOORS
OUTSIDE CORNER FITTING
FLUSH WITH FLOOR

KNAPP BROTHERS Knapp SANITARY METAL TRIM TRADE MARK MANUFACTURING CO.

2419-25 W. 14th St.
CHICAGO, ILL.



William N. Bowman Co., Architects *Byers High School, Denver* *Daniels & Fisher, Linoleum Contractors*

NAIRN
Battleship Linoleum

IN the thoroughly modern buildings pictured here—latest evidence of the broad-gauge school program of the city of Denver—Nairn *Battleship* Linoleum is used exclusively.

The administrative offices of this great educational enterprise are equipped with Nairn *Battleship* Linoleum to resist the steady flow of traffic of a huge business organization.

In the Byers High School, too, Nairn *Battleship* Linoleum resists the steady scuff and tramp of hundreds of students on hourly rounds from class to class.

And for forty-nine years Nairn Linoleum has stood at the head of its class. For beauty and durability, resiliency and moderate first cost, it has no peer. That is why it is the choice of architects the country over.

Shall we send you generous samples?

THE NAIRN LINOLEUM COMPANY, Kearny, New Jersey
W. & J. Sloane, Wholesale: ***Sole Selling Agents***
New York **San Francisco**

Administration Offices: Denver Public Schools

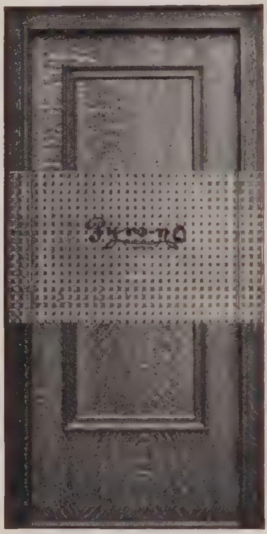
William N. Bowman Co.
Architects

Denver Dry Goods Co.
Linoleum Contractors

Py-ro-no
TRADE MARK
REGISTERED

FIREPROOF VENEERED DOORS *AND* TRIM

Magnified section before veneer is applied



Showing asbestos sheathing indented into core

PYRONO doors and trim are recommended for use in office buildings, hotels, hospitals, apartments, schools and similar types of buildings for the openings to stairways, elevators, pipe shafts, corridor and room partitions and wherever ornamental, fireproof doors are desired.

Pyrono doors and trim are furnished in any design desired and in any cabinet wood. They are installed by carpenters just as regular hardwood doors and trim are installed.

A Few Notable Installations

Federal Reserve Bank Building, Chicago
Federal Reserve Bank Building, Kansas City
Drake Hotel, Chicago
Hanna Building, Cleveland
Cunard Building, New York City
Commodore Hotel, New York City

Full information with details of construction will be furnished architects upon request

The Compound and Pyrono Door Co.

Factory and General Offices
St. Joseph - Michigan
Representatives in All Principal Cities

View of living room, country home of Ralph Hamlin on Uplifters' Ranch in Santa Monica Canyon. Varnum Door Engine used on disappearing panel between dining and living room

VARNUM Door Engines, installed out of sight, open and close doors as silently and easily as Ali Baba's "Open Sesame" moved the door to his treasure cave. They are used extensively in banks, but are particularly adapted for use in fine homes.

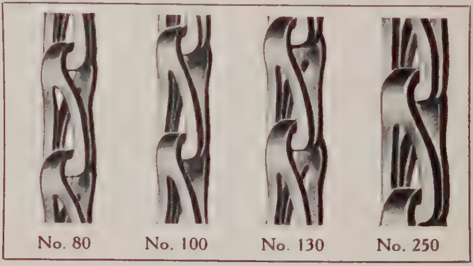
For blue prints and catalogue write

VARNUM DOOR ENGINE CO.

949 West 16th Street
Los Angeles, Calif.

American Sash Chain

represents the maximum in strength and wearing qualities. It will outwear any other type of sash suspension material and always sustains its load.



We have standardized the sizes of chain to correspond with the weights of sash for which they are intended.

No. 80, for 80 pound double-hung Sash
" 100, " 100 " " " "
" 130, " 130 " " " "
" 250, " 250 " " " "

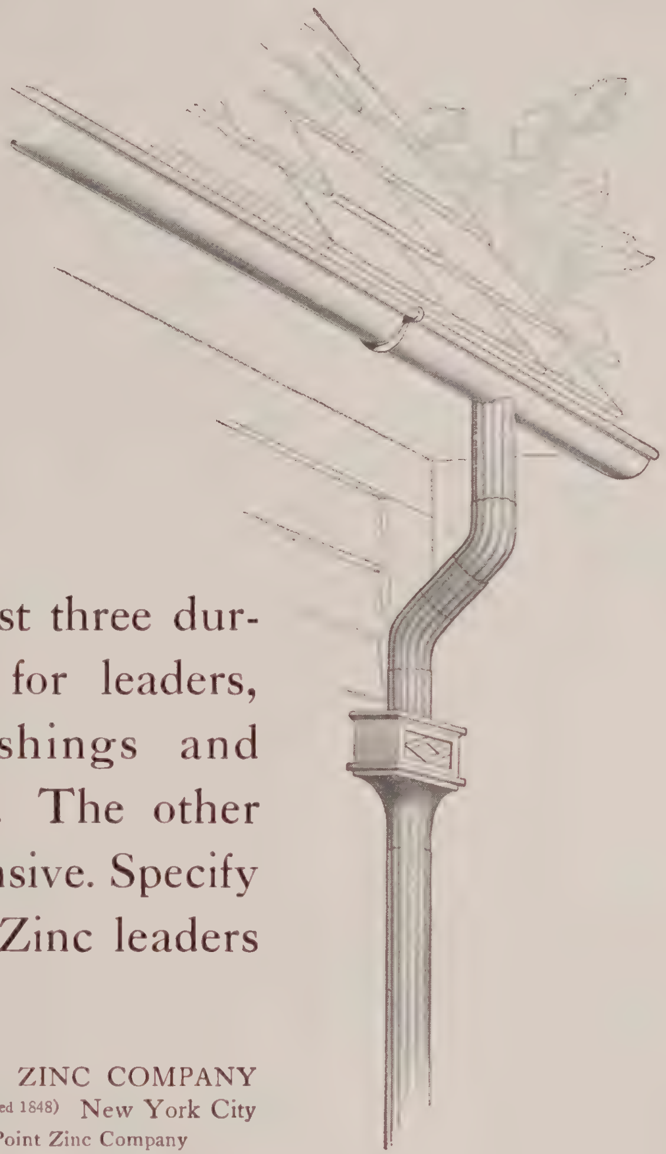
American Chain Company

Incorporated

Bridgeport, ACCO Connecticut

Boston
Chicago
New York
Philadelphia

Pittsburgh
Portland, Ore.
San Francisco



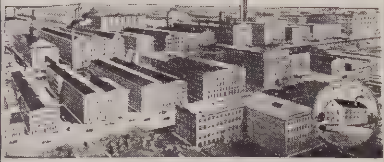
There are just three durable metals for leaders, gutters, flashings and roofing trim. The other two are expensive. Specify Horse Head Zinc leaders and gutters.

THE NEW JERSEY ZINC COMPANY
160 Front Street (Established 1848) New York City
CHICAGO: Mineral Point Zinc Company
PITTSBURGH: The New Jersey Zinc Sales Co.
SAN FRANCISCO: The New Jersey Zinc Sales Co.
CLEVELAND: The New Jersey Zinc Sales Co.

The world's standard for zinc products

New Jersey
zinc

TONCAN: The famous Chateau Frontenac, Quebec, was remodeled in 1915. Toncan was used for roofing and flue work.



TONCAN: The makers of Camel Cigarettes, R. J. Reynolds Tobacco Co., Winston-Salem, N. C., have used Toncan for years in their large plant.

TONCAN

— wherever men and women work and live

You will find iron and its products everywhere. It helps you to work, to cook, to eat, to sleep and to live. Of all metals it is the most useful. The service it gives makes life better and more complete for almost everyone.

Nature foresaw our need and gave us large quantities of iron. To offset this, to make us *know* iron, use it properly and get the most out of it, she made iron a prey to two great diseases—rust and corrosion.

Our work is to find out the best ways to use iron for different purposes—to mix it with other metals and make alloys that fight rust and corrosion.

Toncan metal is one of our greatest achievements. This alloy is of purified iron with enough copper added to obtain the greatest possible resistance to rust and corrosion.

Our reward is the almost universal service Toncan gives or can give. Wherever there isneed for rust-resisting sheet metal, Toncan is being used.

Toncan serves in the home, on farms, in factories, railroads, mines—in almost every phase of human activity.

If you make, buy or use any product of iron, it might help you much to write to us; give us all the information you have and let us tell you if we know of a better iron or alloy.

UNITED ALLOY STEEL CORPORATION, Canton, Ohio

Branches in Large Cities—Distributors Everywhere

TONCAN METAL

Commercially pure iron alloyed with copper to obtain the greatest possible resistance to rust and corrosion.

U-LOY STEELS

Special analysis and alloy steels made to your specifications or ours for any required purpose.

MADE BY THE OLDEST AND LARGEST PRODUCERS OF HIGH-GRADE ALLOY STEEL

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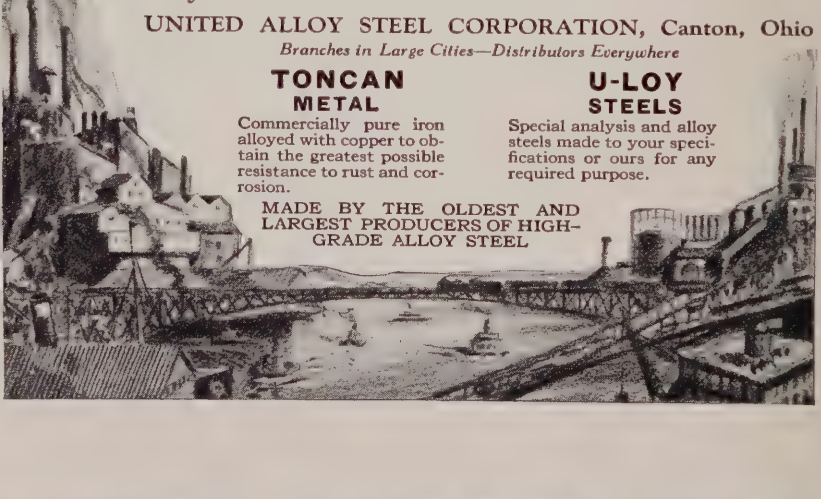

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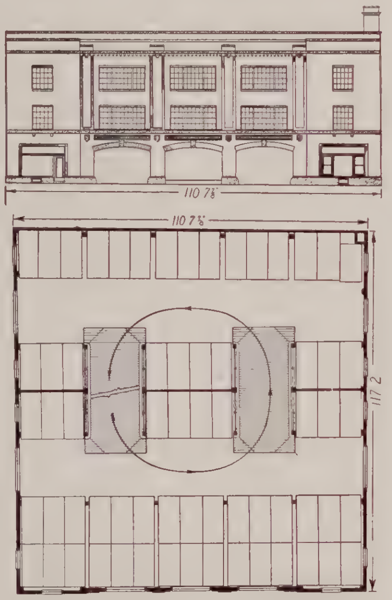

Facade and Floor Plan — Hotel Penn Garage

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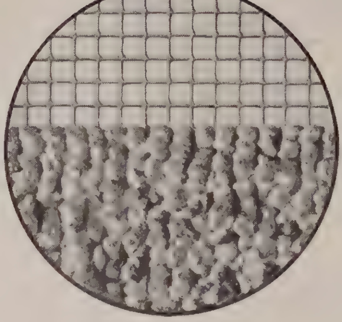

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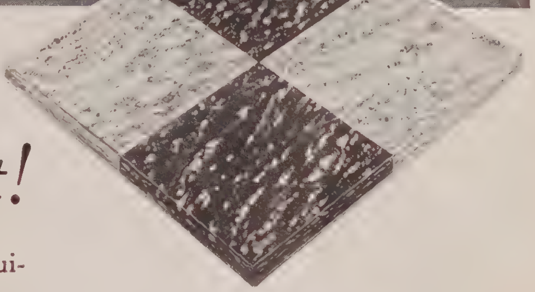
A typical installation of "U. S." Tile Flooring in the Roosevelt Savings Bank, Brooklyn, N. Y.



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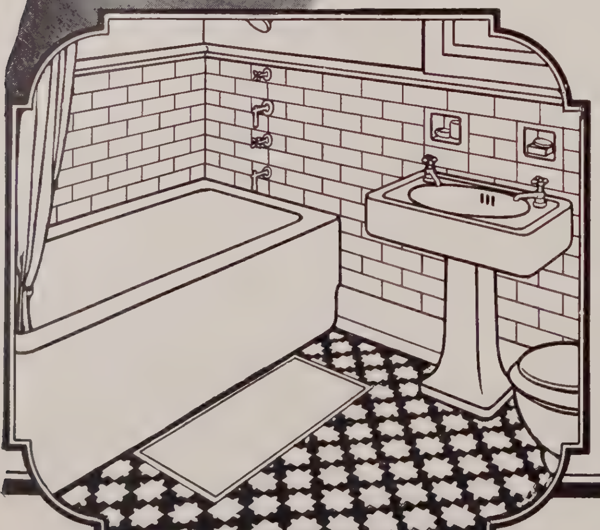

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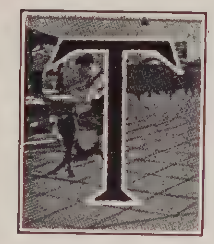

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Photo shows exterior of Federal Reserve Bank, Boston, Mass. Architect: R. C. Sturgis, Boston. *Gold-Seal* Battleship Linoleum laid throughout by Bonded Floors Co.

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Architect: T. M. James
Brookline Savings Bank, Brookline, Mass.
Architect: F. J. Untersee
Marine Trust Company, Atlantic City, N. J.
Architects: Dennison & Hirons
Hartford Connecticut Trust Co., Hartford, Conn.
Architect: Benjamin Morris

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BOOK DEPARTMENT

THE DAVANZATI PALACE, FLORENCE. By Louis Conrad Rosenberg. Descriptive text and measured drawings of one of the most famous of early Italian renaissance buildings. Drawings covering every important detail in the palace likely to be required by a modern architect working in the primitive renaissance style. 70 plates, 10½ x 13½ ins. Bound in buckram. Published by The Architectural Book Publishing Co., 31 East 12th St., New York.

ALTHOUGH Italian cities are not subject to the incessant tearing down and building up which are said to cause the almost complete rebuilding of an American city at least once in each century, there are surprisingly few buildings in Florence which may be regarded as remains of the early renaissance era. Of these few examples the Davanzati Palace is one of the chief, though during its long life it has experienced many vicissitudes, falling upon evil days and reaching an advanced stage of decrepitude from which it was finally rescued and restored with archæological fidelity to something closely akin to its original and pristine condition. The restorations were done under the supervision of an eminent antiquarian who has filled the palace with furnishings of the period, so that it presents much the same appearance as when built during the fourteenth century.

A Court and Stairway

Illustration from "The Davanzati Palace, Florence"

The Davanzati Palace ranks as one of the examples of Italian renaissance architecture most interesting to architects of the modern world. This is due in large measure to its comparatively moderate size and character, for it is neither so vast nor so overwhelmingly magnificent as many of the great palaces of Italy. Hemmed in between the Via Porta Rossa and the narrow Via Capaccio its area is not great, and its comparatively moderate number of spacious rooms are beautiful chiefly by reason of their dignified, accurate proportions and their reticent and somewhat austere character instead of depending upon splendor of embellishment as do so many of the later renaissance buildings. It is just this early, primitive character which has led to the basing upon it of so many modern interiors, particularly in residences.

The present volume is a useful and authoritative collection of plans and measured drawings recording data which concerns architects interested in the earlier Italian renaissance. In addition to views of the exterior of the palace, which is comparatively well known, the author gives plans of the various floors and half-tone illustrations from photographs of most of the rooms, together with measured drawings of all their details likely to interest the present-day architect. There is no detail of an early renaissance palace which was not given a well considered and finished grace; much depended upon proportions of rooms and heights of ceilings, and upon proportions of door and window openings, corbels, chimneypieces and the like there were lavished all the thought and care which render them after almost four centuries models which architects delight in following. Here are measured drawings of ceilings, chimneypieces, window and door trim, and of the nail-studded shutters which were used in old Italian houses for protection against robbery, but which like everything else of that period were rendered decorative and ornamental. All these structural accessories involve, of course, the use of considerable ironwork, such as hinges, bolts, knockers, andirons, railings

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With a Preface by Ralph Adams Cram, F.A.I.A.

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and other details, drawings of which are included here. To give the necessary contrast to walls which were frequently of plain, rough textured plaster much use was necessarily made of polychrome decoration on ceilings and woodwork; sometimes the walls themselves were polychromed in diaper patterns or in other ways which involve much use of all-over designs, and in this volume there are given for the modern architect or interior decorator not only these ancient patterns themselves but indications of the colors in which the designs have been worked out. The treatment of the floors of the palace is not overlooked, nor is the manner of glazing the windows which contribute so powerfully to the character of the building.

The volume is possessed of a value and an interest which are permanent, for in the use of this most subtle of architectural styles success depends upon the utmost care in the following of the best precedent, and in this work the following of excellent precedent is made possible by its presentation of views and drawings.

GARDENING UNDER GLASS. By F. F. Rockwell. 297 pp., 5½ x 8 ins. Fully illustrated. Price $3.50 net. Doubleday, Page & Co., Garden City, N. Y.

LANDSCAPE gardening is so closely related to architecture that the subject may well be regarded as possessing an architectural application. Buildings of many types—notably country houses—depend for much of the effect for which their architects strive upon surroundings suitably disposed and fittingly developed in accordance with definitely formulated plans; even city houses and structures of certain other kinds rely upon gardening in other forms for much of their exterior and interior adornment, so that the subject of gardening deserves well of architects who value the finished and harmonious appearance of their work.

Now the beginning of much gardening involves the use of greenhouses, cold frames, and other structures in which growth is produced under glass, and this study of gardening under glass by an authority well and widely known gives the reader an insight into the vast possibilities which such gardening holds forth; in fact as one turns the pages of this instructive work and comes to illustrations which show the luxuriant growth of all kinds of flowering plants and every manner of vegetables, and peaches, nectarines, grapes and melons ripening within a few inches of the sleet and snow of a northern winter, the wonder grows that wider use is not made of methods which render these luxuries easily possible, particularly when it is suggested that the methods are neither inordinately difficult nor prohibitively costly.

For architects the volume holds an appeal which is both strong and direct. Architects are inclined to discourage the use of "glass houses," even when they realize their value, because they are so often ugly to the extent of marring the appearance of their surroundings; when they are absolutely essential, architects generally accept them as a necessary evil and either place them in remote and obscure corners or so mask or screen them with tall planting that their ugliness is concealed, while their benefits are enjoyed. There is no reason, however, for greenhouses' being the eyesore they only too often are, and the firm of builders responsible for much cooperation in the preparation of this work have solved the architectural problems involved and in publications of

—*protecting concrete from weather*

and from the destructive sulphur fumes of coal smoke and soot, as well

Monsieur Kessler was right, back in 1883, when he recommended the metallic fluosilicates for the preservation of limestone against disintegration by the elements. Since that time, in this "age of concrete," atmospheric conditions have become worse instead of better, especially in the cities.

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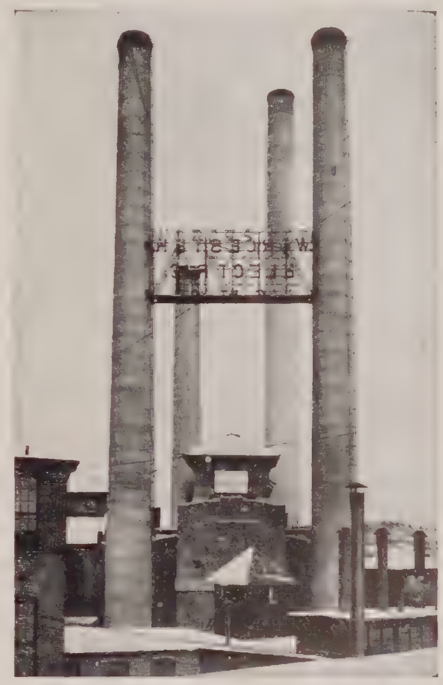

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their own set forth the excellence with which architectural skill may clothe them. Outbuildings of all kinds, and particularly farm structures, silos and water tanks, were long regarded as undesirable and as necessarily spoiling any estate where they were placed, but anyone who follows the progress of architectural design in America knows that farm buildings, and even tanks and silos, are now so designed that they are wholly admirable from an architectural point of view;—and just so with the greenhouse. The book may well bring to an architect's attention possibilities which would be to the endless advantage of his clients.

REINFORCED CONCRETE; A Practical Handbook for Use in Design and Construction. By R. J. Harrington Hudson, B.Eng., A.M.C.E., A.M.Mech.E., M.C.I., M.Am.C.I., Member of the Science Committee of the Concrete Institute, Executive Engineer, Public Works Department (India). 318 pp., 5½ x 8 ins. Price $7. E. P. Dutton & Co., New York.

THE rapidly developing use of reinforced concrete and the constantly increasing facility with which engineers and builders handle its problems are marked by the changes which the years see in the use of this material. These changes are usually the result of experience, and engineers regard their experiences as belonging in no wise to themselves personally, but rather to the profession which they represent. It follows, therefore, that the discoveries to which these experiences frequently lead are quickly made common property, and they serve to enrich the general fund of knowledge of the engineering profession.

With long and varied practical experience in the use of reinforced concrete the author publishes a book intended for the use of students of practical engineering, as well as of those who are actually engaged in designing work of this nature or who are concerned with its construction. Part I considers briefly the materials used in reinforced concrete, the necessary preparations and the actual construction. Part II is given up to discussing the designs of slabs, columns and beams, and to make this section of the volume as helpful as possible there is included a chapter which illustrates and explains the complete design of a floor which is supported on columns. This part of the work includes a number of valuable tables,—one dealing with the proportions of slabs, another with the proportions of standard T-beams, while a third table covers the properties of square columns. The use of these tables in practical designing is also illustrated. Part III deals with questions presented by secondary stresses in monolithic construction, and in the appendices there have been included mathematical investigations of secondary stresses. Engineers now recognize fully the importance of the monolithic property of reinforced concrete, and they realize that to design reinforced concrete intelligently it is vitally necessary to possess knowledge of the stresses which are likely to develop in the structure. In one of the chapters of this work there is introduced what the author believes to be a new method of analyzing the bending stresses in columns.

The book gives every indication of thorough and careful work upon the part of the author and those who have assisted him in different ways, and it is replete with diagrams, tables and data of every requisite kind which could aid in making possible a firm grasp upon the subject by those for whom the volume has been prepared.

STAINED GLASS TOURS IN FRANCE. By Charles Hitchcock Sherrill. 298 pp., 5 x 7½ ins. Price $2.50. Dodd, Mead & Co., New York.

IN the modern revival of interest in the different arts which have contributed to the glory of architecture there has been constant growth during the past 30 or 40 years. Architecture is perhaps better understood by the American people in general than at any period of our national history; sculpture and painting in their application to architecture are receiving due appreciation and meeting with constantly wider use, and other arts, such as the working of metal, are entering into building as possibly never since, during the renaissance, they played parts so important in aiding architectural expression.

It is strange that amid all this quickening of appreciation the art of the glass worker has been almost the last to feel the revivifying effects of renewal of interest. The art is not one which hides its light under a bushel, for rather it makes use of the light to assert its glories, and from any of the Gothic cathedrals of Europe the windows proclaim the achievements of the ancient art of the glass stainer and painter. It might be replied, of course, that the revival of any art is slow in proportion to the depths to which it had fallen, and that public interest is reluctant to be stirred owing to the low estate to which the craft fell and from which in large measure it has not yet been redeemed, and that due recognition will be accorded when it has been proved that the art is once again placed upon a basis which renders such recognition meet and proper.

Glass, like all the arts, has known its periods of inception and growth; then the bright era of its culmination, followed by a long period of slow but steady deterioration. Its period of triumph came during the thirteenth and fourteenth centuries, while its lowest ebb was not during the late renaissance, for still lower depths were to be reached during our own times, in proof of which assertion one need not go far to find visible, ocular proof. Analysis of the glories of the glass worker at Chartres and Poitiers, to mention two places which possess supreme examples, will show that its splendors are due in large measure to its being regarded as an aid to architecture and not as an art to which architecture itself was tributary. This means that, like sculpture when suitably used with architecture, glass was subordinate to the controlling scheme and aids in preserving the architectural harmonies. The old glass takes its place in due and orderly fashion which glorifies the art while fulfilling its function in the whole. Modern glass, upon the contrary, is generally planned to be wholly independent of architecture, which in fact the glass maker seems to regard as an accessory—a sort of frame to set forth the glass which is practically a picture painted upon glass and making use of the full resources of perspective, which when set in place provides not the rich repose and restraint of the old work but distraction and discord owing to the introduction in a solid wall of a painting wholly unrelated to its surroundings. Only during the last few years has the venerable art of glass painting been redeemed and its glories started upon the road to renewal, because its principles are understood.

This excellent volume is not a treatise on glass, and much less a work in which its technique is considered. Rather it belongs to the literature and history of the subject which are of wide extent, for glass is deeply interwoven with the history of the mediæval centuries and

Interior of the Guaranty Trust Company's Fifth Avenue Building, New York.

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into the lives of the people. Mr. Sherrill is already widely known as the author of a number of works on glass, and this latest volume records a pilgrimage to old French shrines in which there still remains much such glass, in describing which there is abundant opportunity for stirring the imagination and enthusiasm of the reader. The volume will undoubtedly aid in increasing the appreciation of glass by broadening the popular knowledge of the subject.

STUDIES ON BUILDING HEIGHT LIMITATIONS IN LARGE CITIES, with Special Reference to Conditions in Chicago. Compiled by Charles M. Nichols. 299 pp., 6 x 9 ins. Price $2.50. Chicago Real Estate Board, 57 West Monroe street, Chicago.

THE question of heights of buildings allowable in cities is a matter which is engaging the attention of municipalities in widely scattered cities. Boston has been considering the raising of its limit of 125 feet, and Chicago since 1892 has made various laws upon the subject without yet having reached a practical and final solution of the problem.

Congestion in American cities is generally due to the small size of the area which either is or is supposed to be available for purposes of certain kinds Thus in Boston or New York the smallness of the area is due to the physical limitations of a peninsula or an island upon which the city is built, while in Chicago the area which almost alone is regarded as suitable for high class development is that within the elevated railroad "loop." In all these cities land values in the favored districts are high, and the desire of property owners is naturally to obtain the maximum returns from their holdings, which involves building as many stories as possible from which to draw rentals. This, however, is being found to be impracticable, and would be even more so were all property owners sufficiently enterprising to develop their holdings with tall buildings. Already in certain districts in lower New York, where narrow streets have been solidly built up with such structures, the lower floors suffer by being cut off from light and air, so that only the demand for space in the district keeps them occupied at all. Obviously, in the interest of fairness and the public good some solution of this problem must be found, and the question has an intimate bearing on zoning, transportation, congestion, and a number of other subjects which must be considered.

Many causes unite to render impossible the making beautiful of an American city. Americans view with despair the well ordered harmony of the greater cities of Europe, which have been developed under fixed rules, but nothing of the kind can be done in America, so with harmony and beauty out of reach the next best thing is to strive for cities in which access to different parts is convenient and where the buildings are practical to work in, and upon even these utilitarian considerations the laws governing the heights of buildings play an important part.

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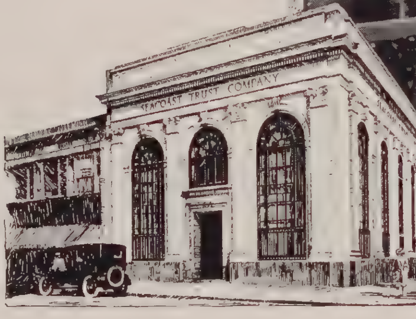

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The ARCHITECTURAL FORUM

VOLUME XXXVIII

NUMBER 6

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ALBERT J. MacDONALD, Editor

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TO the modern *Bank* money is no more than a symbol, an implied power, an obligation. It has slight attractiveness in itself, the important thing being the use that can be made of it. The *Bank* of 1923 holds that the wealth of a country is not in its money, but in the things that money can buy,—real estate, farm lands, homes, industrial plants,—offering employment to capable executives and skilled labor.

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THE EDITOR'S FORUM

TRANSFER OF REGISTRATION

THE Committee on Public Information of the New York Chapter, A. I. A. has established a precedent for transfer of registration from New York to other states through the National Council of Architectural Registration Boards. This will interest architects previously registered in New York without examination. By a special examination, approved by the New York Registration Board, some of the difficulties encountered in transfer to other states have been overcome.

New York architects registered by exemption who have for more than 10 years been engaged in practicing architecture should apply to the New York State Board of Examiners for what is known as the "senior examination" of the National Council of Architectural Registration Boards. Architects of less than 10 years' practice may apply to the National Council of Architectural Registration Boards for the "junior examination" if the applicant was not registered by exemption in New York and the regular New York examination is not accepted by the state to which transfer is desired. Both of these classes must also apply for blanks to the Secretary of the National Council of Architectural Registration Boards, 64 East Van Buren street, Chicago.

THE SHORT COLUMNS OF ST. PAUL'S

HISTORY records many instances of the persistence of traditions which live on for century after century notwithstanding repeated denials, and light is thrown upon a tradition of some architectural interest by a communication which comes to us from Mr. A. W. Rudolph, of Altoona.

"Something like two years ago many architects were interested in finding among the profusion of advertising matter that came into their offices a series of excellent imitations of antique wood cuts illustrative of bygone celebrities of the architectural profession. These were issued by the advertising bureau of a certain cement manufacturing concern which is widely known.

"Among them there was, of course, a likeness of Sir Christopher Wren, accompanied by an anecdote from his career to the effect that when the famous architect submitted his plans for St. Paul's Cathedral to the church council that solemn body decided that the columns supporting the dome were too few in number and forthwith directed that the number be doubled, which the architect, without demurring, did. A century later someone made the discovery that half of the columns were just short enough to be supporting nothing.

"This story, coming from some unknown but presumed authority, was read by all before whose eyes it fell, and was probably accepted without question, largely on the reputation of the concern manufacturing the product of which the series of folders was an advertisement. The writer was one of the possible few who questioned the probability of the story and interested himself sufficiently to begin a campaign of authentication. He asked questions and wrote letters. Among those he questioned were two members of the architectural commission of a certain state, who solemnly assured him that it was so,—that they had seen it.

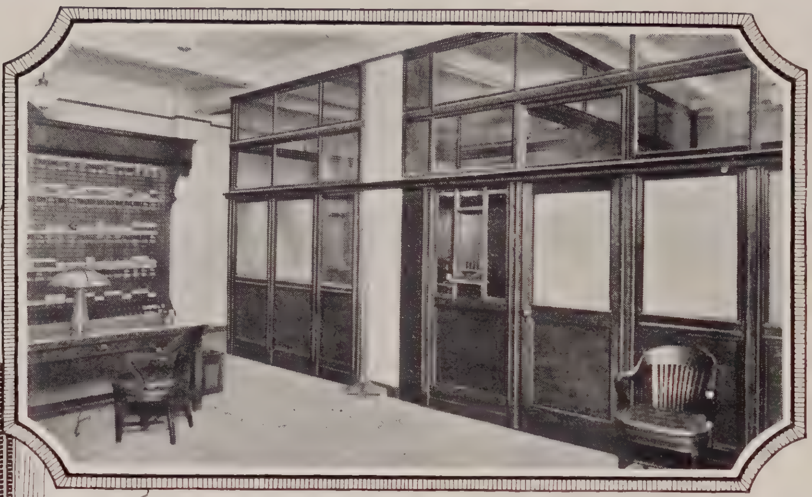
"Answers to letters were received from the *American Architect*, the *Architectural Record*, the architectural colleges of Cornell and of the University of Pennsylvania, and also from THE ARCHITECTURAL FORUM. None of these could offer any substantiation whatever or any authority for the story. THE FORUM considerately attached to its reply a page from *The Builder*, of London, containing an article on 'St. Paul's Cathedral and its Architect,' by W. R. Lethaby. He was written.

"In the meantime the writer wrote the cement company under the name of which these folders were issued. A week later a reply was received from the advertising concern, which had originally issued the series of folders. The letter is quoted:

" 'Your letter to the cement company was turned over to me as the man responsible for the series of architectural folders you mention. You picked the only one that I can't give you chapter and book for,—incidentally the one that gave me the idea for the whole series. My mother's uncle was the resident architect for Canterbury Cathedral, and the story referred to is one that as a youngster I often heard repeated to illustrate the difficulties of an architect with lay folk. In writing the series I tried to verify the accuracy of his story, but, frankly, was never able to do so.'

"Following this some weeks came an answer from Mr. Lethaby: 'I have heard variations of your column story, but never in relation to St. Paul's. In that place it was certainly (whether told or not) never true, and I feel that it was probably a mythical story (possibly more interesting on that account) intended to show the craftsman's competence. There are other stories of a similar kind, that of the criticized sculptor, who pretended to cut away and drop dust from his hand until the critics said the result was splendid.'

"Thus dissolves one of those interesting myths that inevitably attach to great names. The writer submits the story and its denouement, inasmuch as others may have felt a like interest in the anecdote."



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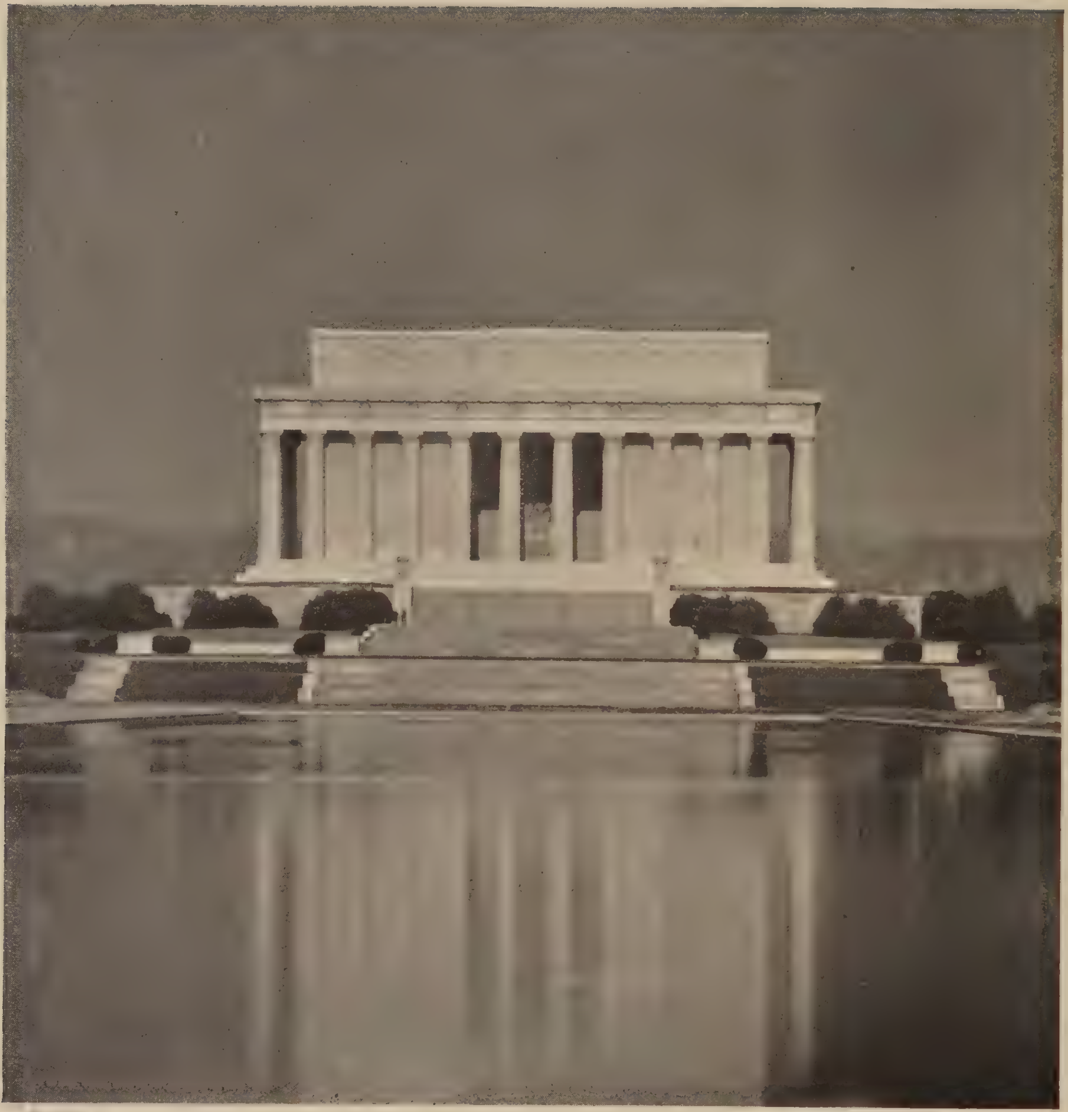

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THE LINCOLN MEMORIAL, WASHINGTON
HENRY BACON, F.A.I.A., ARCHITECT

Mr. Bacon was presented the gold medal of the American Institute of Architects by President Harding at a ceremonial pageant on the steps of the memorial on the evening of May 18, 1923. The immense scale of the building may be appreciated by noting the two figures at the foot of the buttress at the left of the steps.

The
ARCHITECTURAL
FORUM

VOLUME XXXVIII JUNE 1923 NUMBER 6

The Architecture of Banks

By FREDERIC C. HIRONS
Of Dennison & Hirons, Architects, New York

THE fundamental principle of architecture throughout its history has been the expression of the purpose for which a building is used. What are the essentials to be sought for in planning a bank?

Primarily a bank is a building in which the currency and valuables of the public are guarded and stored. It affords quarters for an organization by means of which the financial interests of the community are safeguarded, and in fulfilling this function it performs a vital part in the business and industrial development of the country, since this activity cannot develop without the co-operation of the financial organization which forms its support.

There are many types of bank buildings: the individual bank; the bank and office building; the savings bank; the trust company; the private bank; the title and mortgage company, and so forth. These may take various forms, such as are expressed in metropolitan banks on the one hand, and banks in the smaller cities, country towns and villages, on the other. It is not the purpose of this article to suggest in any way the types of architecture that shall be used, but rather to bring out the difficulties and show possible solutions in buildings of this nature.

The individual bank presents in itself the possibility of a great number of solutions, dependent upon its site. The site may be an interior lot giving only one main facade to the building, or it may be that the site is located on the corner of two streets, giving two facades, or the site may be such that the building located on it is free on all sides, or it may be lots of irregular shapes.

In the designing of banks which are purely banking buildings, the first consideration that should govern the designer is the surroundings and character of the buildings which form the entourage of his structure. The second consideration is the question of cost; this is all-important and must be kept in mind while the building is being designed, or else the architect may have the doubtful pleasure of redesigning the entire building in order that it may come within the limits of a specified appropriation. After these limiting conditions have been carefully considered, the architect may properly commence his sketches preparatory to his study of the architectural expression of his problem. In presenting a solution to a board of bank directors, it is advisable generally to make several small sketch perspectives or elevations showing the various types of buildings which might conceivably meet the requirements established, since on such a board or committee there are always certain members who will have more or less strong personal opinions concerning the use of architectural motifs such as columns, rustication, iron grilles and a hundred other details. The question of the general design

Detail of First Floor Windows
Hartford-Connecticut Trust Co., Hartford
Benjamin Wistar Morris, Architect

Grille at Stairs to Safe Deposit Vault
First National Bank, Detroit
Albert Kahn, Architect

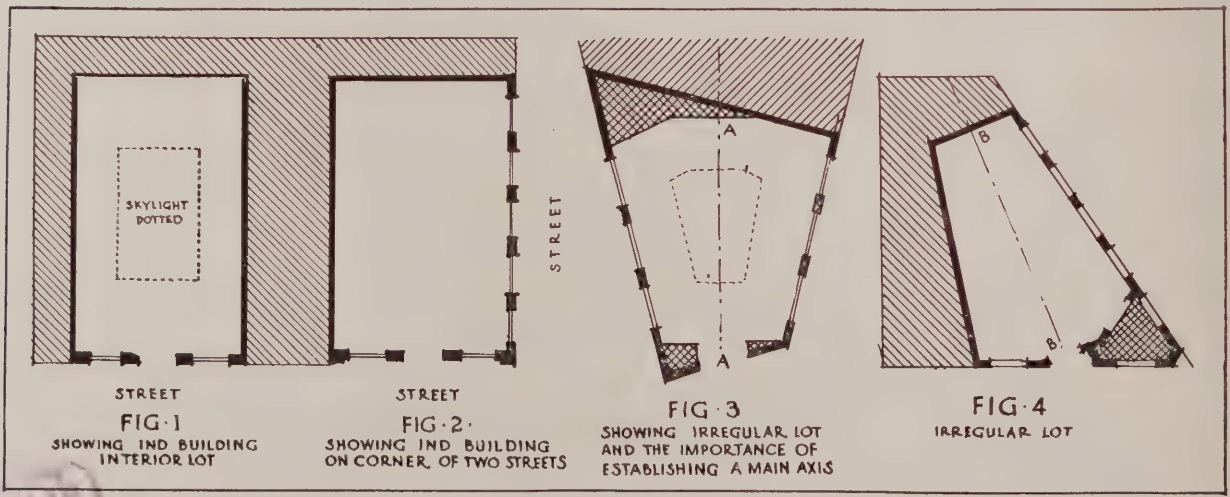
should be subject primarily to the decision of the architect, but his decision must be in keeping with the desires of his clients. Bankers, if one may make a generalization, constitute a class of business men whose confidence, once it has been won by the architect, will gladly leave to his discretion and decision not only the architectural expression of the building, but the disposition of many of the practical elements which enter into the working scheme of the bank. In the large cities in this country many excellent banks have been erected in recent years, and the knowledge of good bank designing is undoubtedly spreading.

An individual bank in any one of the larger cities is a "*probleme de luxe*," since the architect is given opportunities full of possibilities for monumental expression of architectural design. However, with banks of this type, the ground area is naturally limited in extent, and the architect has before him the problem of arranging his plan in such a way as to gain the maximum floor area consistent with a good architectural expression. If the architect achieves this result (and the achievement is difficult), he may justly expect, after the building has been occupied and inspected by its customers, to hear that his clients are saying, "We think we have the best modern bank in the country," and they will go out of their way to recommend him to their fellow bankers. The praise is gratifying, but it is a reward not easily won. There is no doubt that today the American banking system is the most complete in existence. In order to maintain this efficiency the American banker must have a building that will fulfill his exacting working requirements in every way.

Let us consider the architecture of various types of banks and bank buildings. The individual bank, located in a large city, is one which gives the architect his greatest opportunity. It is usually desired in this type of building to have a banking room which is most impressive and monumental in scale, and in designing the building the architect should constantly bear this in mind. In this particular case the determining element in the arrangement of the plan is given by the shape and disposition of the site involved.

The lot decided upon for the site of the bank should, if possible, be selected with a view to the purposes of the building which is to be erected upon it. A site which would be satisfactory for certain classes of buildings might be far less satisfactory for a bank. The types of lots which the architect in the course of his practice has to struggle with are various indeed. Each will call for a particular solution in the design of his bank building, but the sketches shown (Figs. 1, 2, 3 and 4) illustrate in a general way the various problems that have commonly to be met and solved. The best way to approach the problem is to decide tentatively upon the possible expression for the interior of the bank, and then to consider what expression the facades may take. Naturally, these two conceptions have an interacting relation; one should be checked or regulated by the other.

In Fig. 1 we have an interior lot, fronting on the


SKYLIGHT DOTTED
STREET
FIG·1
SHOWING IND BUILDING INTERIOR LOT
STREET
STREET
FIG·2·
SHOWING IND BUILDING ON CORNER OF TWO STREETS
A
A
FIG·3
SHOWING IRREGULAR LOT AND THE IMPORTANCE OF ESTABLISHING A MAIN AXIS
B
B
FIG·4
IRREGULAR LOT

Bank Plans for Typical Lots

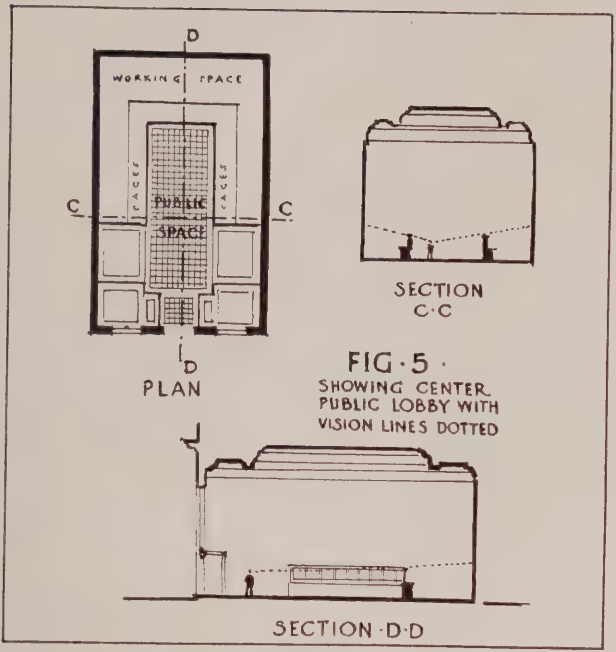


Fig. 5

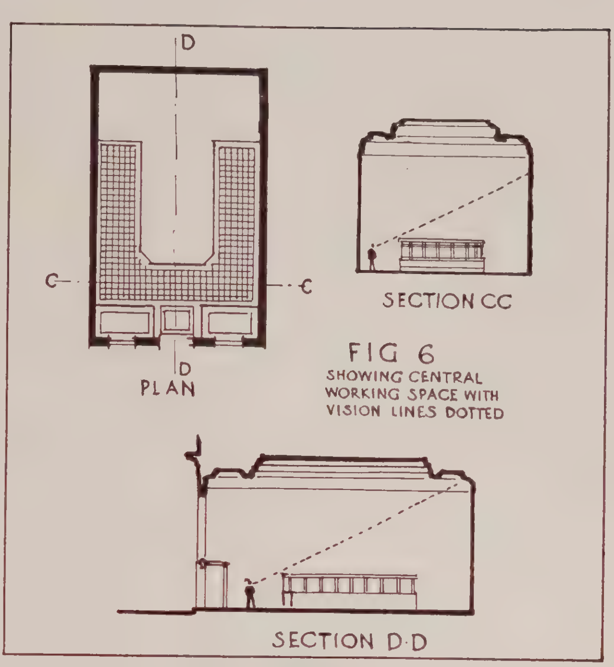


Fig. 6

street. The banking space for this type of plan must be lighted by ceiling lights. In Fig. 2, with streets on the front and side, it is possible to light the room from two sides, provided that the width of the room is not too great. Figs. 3 and 4 are irregular; it is preferable to light the banking room in these cases from the side walls, since the finding of a solution for an attractive ceiling lighting is extremely difficult. In arranging the elements of the plan of the banking room in an irregularly shaped building, the first thing to be attempted is the establishment of a main axis line which will serve as the backbone for a balancing of the elements. These observations apply to the exigencies of a lot of irregular shape.

Bronze Elevator Door
Rhode Island Hospital Trust Co.
York & Sawyer, Architects

Having determined upon the scheme of lighting and on the general form the banking room will have, the architectural design for the building may now be studied. The most important consideration in planning and designing the banking room is the arrangement of the working space in its relation to the public space. The disposition of the public space and the working space should be decided upon before the architecture of the room is designed, because the banking screen and working partitions may be located in such a way as to prevent one's obtaining an impression of the ampleness of the banking room. These elements should be arranged in such a way that they do not detract from the impressiveness of the room. Fig. 5 shows an arrangement in which the public space is located in the center of the banking room. This arrangement makes possible an excellent view of the room as a whole. Fig. 6, in which the central part of the banking room is occupied by working space, shows how the bank screen cuts off the view of the room. It may readily be seen that in whatever style of architecture or with whatever motifs the wall is treated, the room must be designed so that it will look well studied from all points of view. In rooms of large dimensions, like some in the great city banks, these considerations, namely, the disposition of the public and working spaces, are less vital because of the enormous sizes of the banking rooms relatively to the banking screens.

The psychological value of an imposing banking room upon the depositor and upon the public which has to do with the bank is fully understood by the more progressive type of banker, and he will sometimes request that his building be arranged, if possible, in such a way that

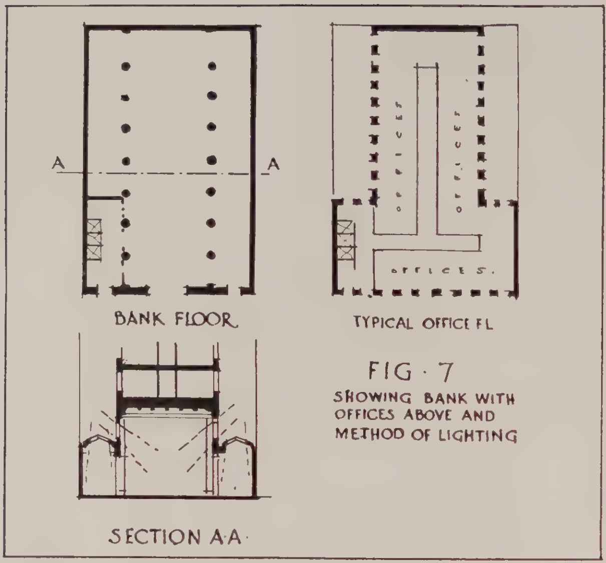


Fig. 7

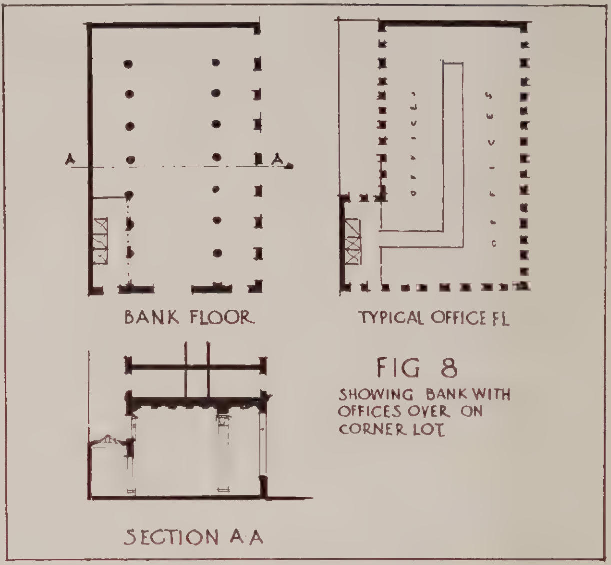
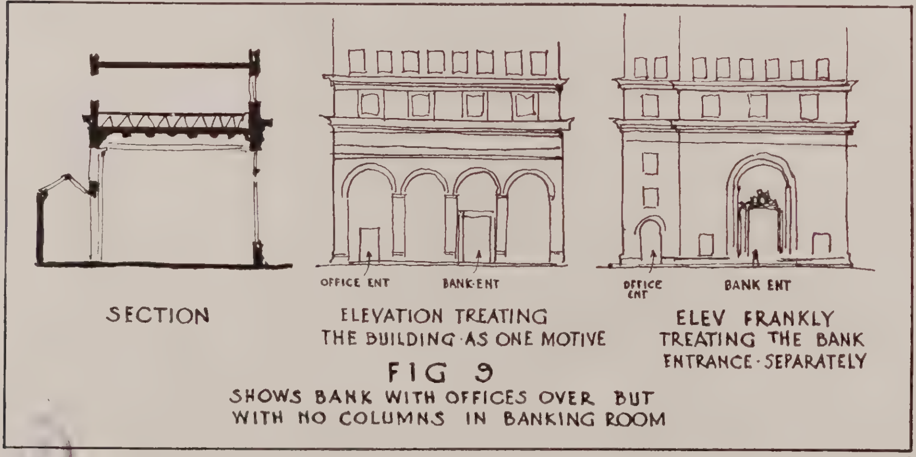


Fig. 8

the public in passing the building can see into the bank and be impressed by the dignity and size of the banking room. In order to make this possible, it is well to treat the facade of the building in accordance with what is called the "open" scheme. By this means arched openings, columns, etc., may be used in the facade, which will permit a view of the banking room from the street.

Having considered the individual bank located in a large city, we may turn our attention to consideration of banks having stories above the banking room, and banks combined with office buildings. These types of banks present much the same problem as does the typical office building, having, however, the added difficulty of providing for the weight of the superstructure over the banking room. Provision may be made in two obvious ways: one, by carrying the superstructure on girders; the other, by bringing the columns which carry the upper part of the building down into the banking room. The Rhode Island Hospital Trust Building, in Providence, offers a splendid example of an imposing room in which the columns have been brought down through the banking room. In this case the architectural solution is extremely good, because the columns are correctly spaced in order to meet the requirements of good architectural design. In many cases, however, the columns are brought down as structural members only and are not disposed so as to permit of a pleasing architectural expression. Such an arrangement is not only wrong æsthetically, but it is an evidence of stupidity, frequently on the part of the designer and the engineer, showing that they have not collaborated properly.

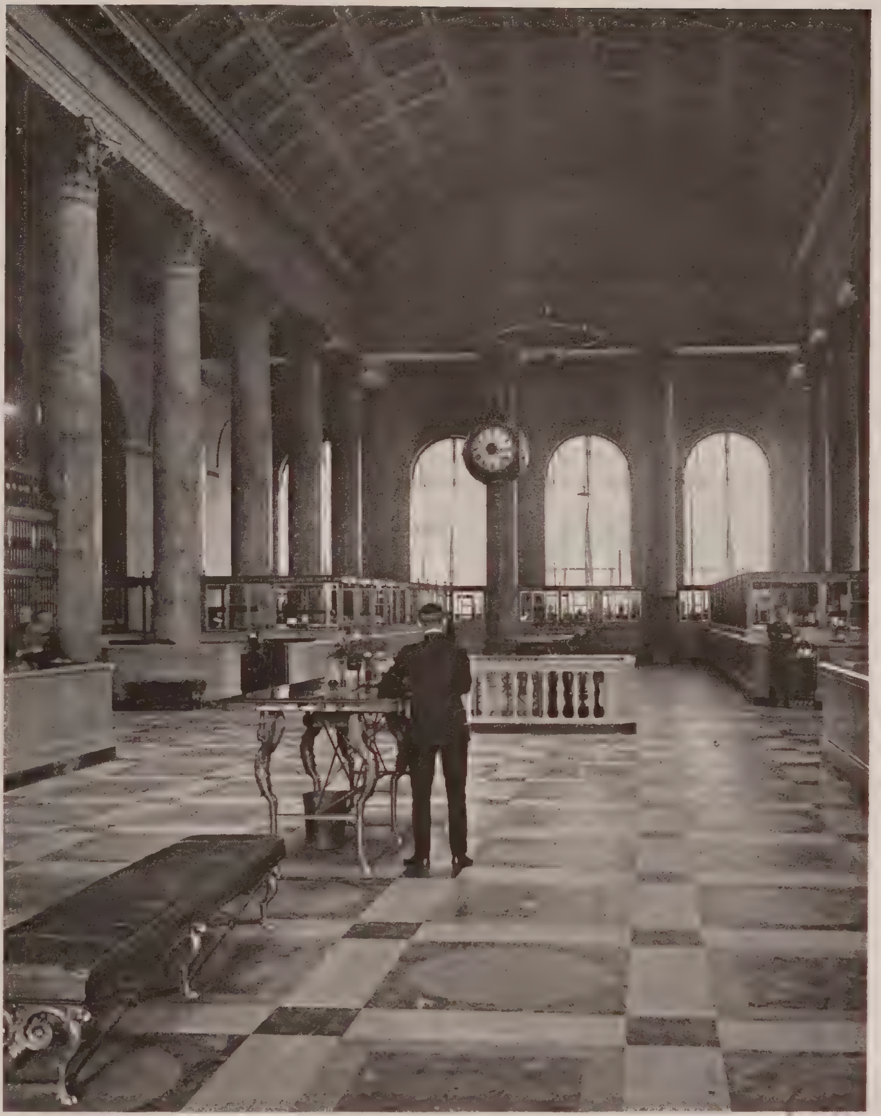
In banks which are housed in the lower parts of office buildings, the solution of the bank entrance is always involved by the necessity of providing also for an entrance to the office building. Of course each office building will offer peculiar conditions which will determine the solution, but one may say that for the usual type and shape of lots which the architect has to consider, the generalization expressed by Figs. 7, 8 and 9 will hold to be true. Fig. 7 shows the plan of an office building with the banking room on the ground floor, on a lot approximately 80 feet wide. In this plan the columns which carry the exterior court walls of the building come down through the bank and permit of good lighting for the banking room. Fig. 8 shows a corner lot approximately 60 feet wide. The arrangement of the upper stories of the office building will have a determining effect upon the arrangement of the banking room, such as is shown in the Section AA. If all columns are left out of the room, the entrance to the bank is not on the center line of the facade. The bank entrance, so de-cen-



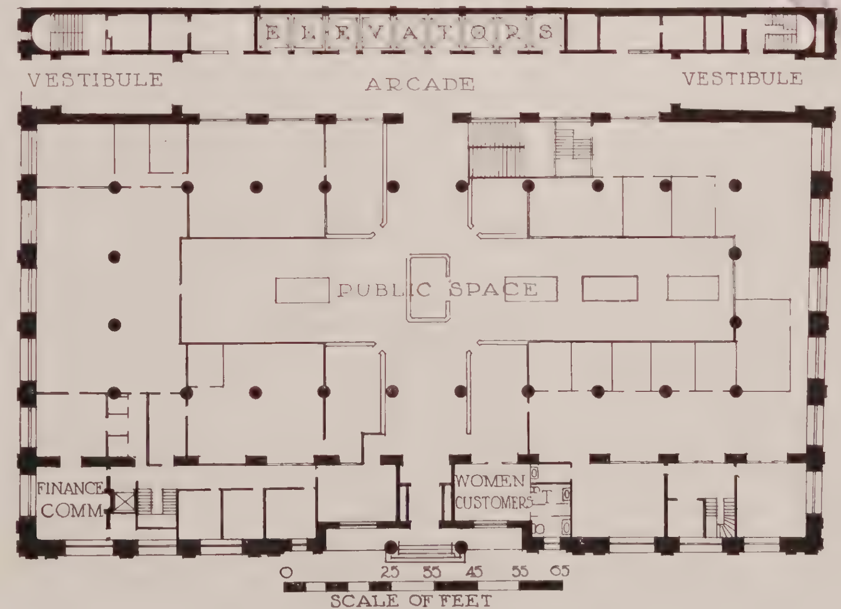
tered, may be treated frankly as is shown in Fig. 9. The entrance to the Bowery Savings Bank on 42nd street, New York (York & Sawyer, architects), is treated in this manner. In that particular building, result of the study is seen in the fine example of this solution of a bank located on an interior lot.

The foregoing outline covers, in a general manner, the problems confronting the architect in the design of the modern city bank. The style of architecture and the character of ornament and detail are matters of personal taste which might be discussed *ad infinitum*, but if we did we would very likely at the end of the discussion find that we had reached the place we started from.

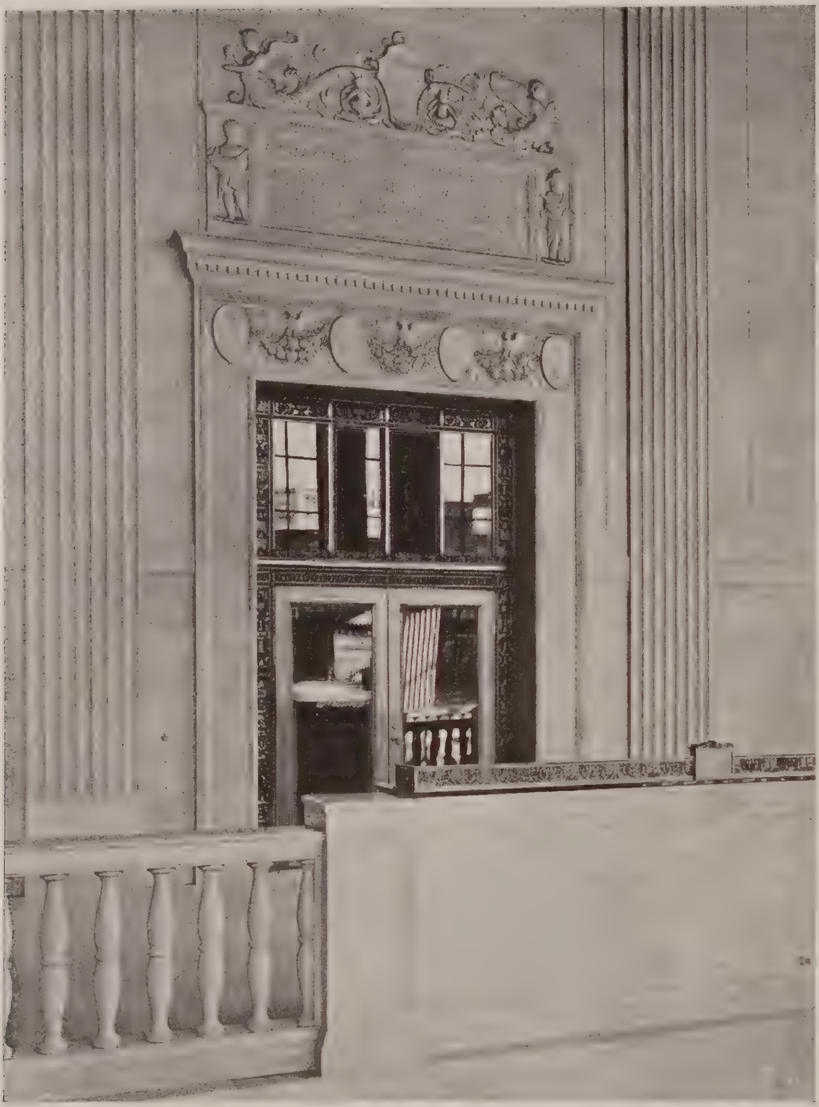
The banks in cities of lesser importance are quite similar to the metropolitan banks in their requirements, save that, of course, all the elements entering into their composition are on a smaller scale. The building committees of such banks will nearly always say to the architect, "We want a fine room, but nothing elaborate." The same principles for the obtaining of this fine room apply to the small bank as well as to the large. Perhaps the most important consideration in the design of the banking room is the entrance or approach. It must be in keeping with the character and importance of the bank. Frequently, large bank buildings housing imposing banking rooms are provided with entrances which are cramped and insignificant, giving no idea that one is about to enter a room of monumental proportions. One of the difficulties which the architect has to meet is the desire of the building committee to locate the directors' and committee rooms in the front part of the building on



Interior of Banking Room



First Floor Plan
Rhode Island Hospital Trust Co., Providence
York & Sawyer, Architects



Detail of Doorway to Office Elevator Lobby
First National Bank, Detroit
Albert Kahn, Architect

the mezzanine floor. This arrangement of necessity cramps the entrance of the bank. If the necessary rooms for the directors and committee cannot be placed on the ground floor, the architect should seek to place them on a mezzanine gallery or on a floor at the rear of the banking room, even if the room is somewhat shortened in consequence.

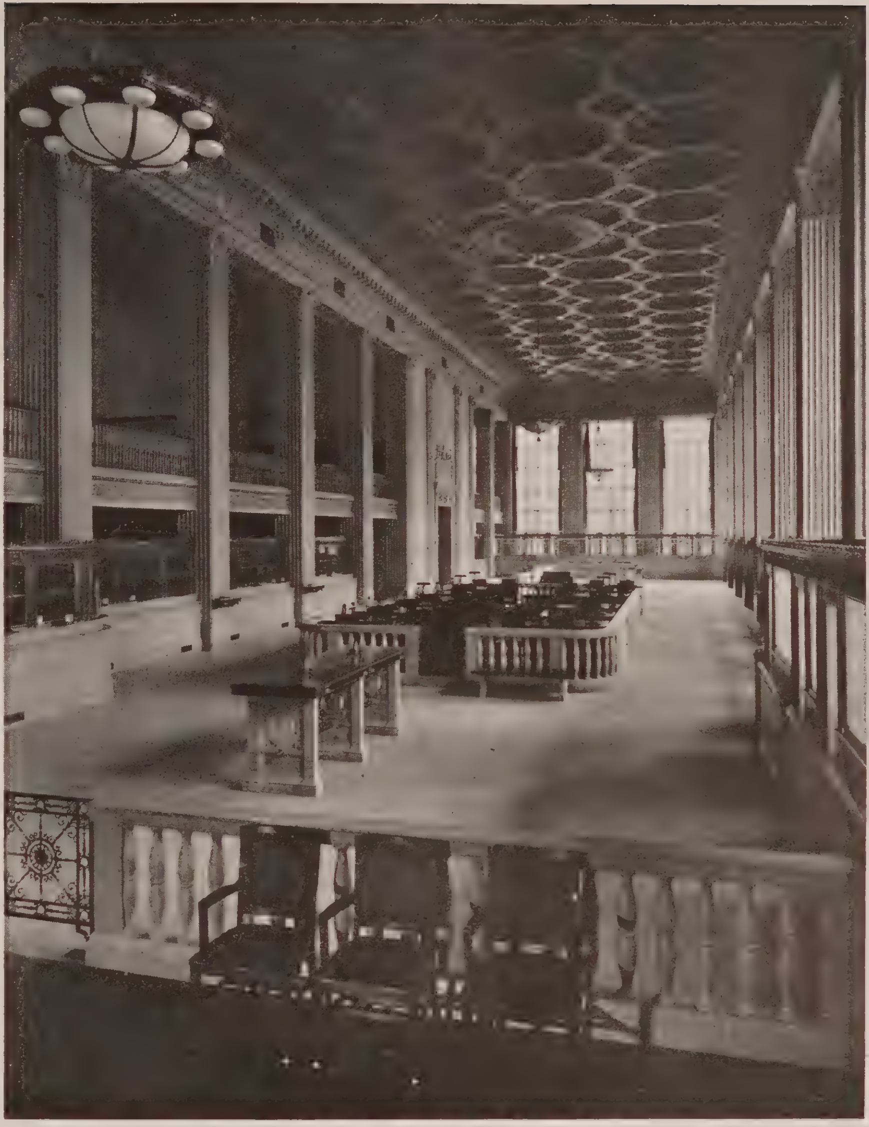
In the small bank, as with the large, the question of architectural style is one which must be worked out by the architect himself. Often it is a good plan for him to prepare several small sketches in order to obtain an expression from the building committee as to the preference in the matter of architectural interpretation. The locality of the building and its surroundings should properly have much to do with the style in which the building is designed. It would not seem logical to design a bank in the Spanish mission style if it is to be erected in some staid New England town. The building would look decidedly out of place. Similarly, a design inspired by the work of Bulfinch or Thornton would not seem to be "in the picture" if carried out in San Diego.

Fig. 11. Wall Inscription
Union Market National Bank, Watertown, Mass.
Dennison & Hirons, Architects

The consideration of materials is very important, and it must have the attention of the architect from the earliest stages of the work of designing the building. A design in brick would differ naturally in character from one executed in granite, limestone or marble. The architectural ornament contributes much to the building, if it is well done, and detracts even more if it is badly done. Having studied the general design with a view to executing it for certain specified materials, it is wise for the architect to keep in mind that the modeling shall be such that the ornament may be fittingly expressed in the material chosen, whether that material be of limestone or marble, iron or bronze, or whatnot. All these materials have their peculiar limitations and qualities. The skillful architect understands how to employ them to their best advantage. It seems advisable to execute the interior of the banking room in materials which are light in tone and color, on the general principle that a room finished in light, neutral colors presents an ample effect. The various stones, such as travertine and Caen, have excellent qualities for the finishing of rooms of this nature. These stones have an added advantage in that they are easily worked. Frequently, the cost of using these stones is prohibitive; in that case they can be imitated in plaster with excellent results.

The color of the banking screen is also to be carefully considered, because if the screen is made of marbles or woods which are dark the impression is created that the public space is smaller than it really is. The color of the screen should bear a definite relation to the color of the room and should harmonize with it. If decorations, painted or otherwise, are used in the treatment of the walls and ceiling, great care should be taken in the colors employed. Mural decoration in banks has, with the exception of certain large city banks, been decidedly neglected. As an example of a bank which has taken advantage of the possibilities of such decoration we may cite a certain bank occupying a prominent location on the main square in Watertown, Massachusetts. The president realized that his bank is located in the center of a historic community. He felt that the bank had taken a vital part in the development of that community, and decided that this fact should serve as an inspiration for the mural decorations of the walls of their new banking building. Watertown was the original mother town of Cambridge, Arlington, Belmont, Brighton, and several other towns. The architect of the bank, acting with the approval of the bank officials, made provision for the installation of the panel shown in Fig. 10. This panel was placed in the center of the ceiling. It shows the map of the district served by the bank, and also the various towns that originally formed a part of Watertown. Below this map are seen three figures representing Finance assisting Industry and Agriculture. This is appropriate symbolism, since Watertown is a weaving and agricultural center. This painting was executed by A. T. Schwartz, and its colors harmonize beautifully with the color scheme of the room. The use of inscriptions, such as those which are shown in Fig. 11, also taken from this Watertown bank, make effective and distinguished wall decorations.

The same principles and limitations apply to sculptural ornament. In employing sculptured ornament, the architect must make careful preparatory studies of the model, bearing always in mind the nature of the materials, the direction from which the light comes, and the height of the ornament above the eye, and he should select a sculptor who is thoroughly familiar with work of



Main Banking Room
First National Bank, Detroit
Albert Kahn, Architect

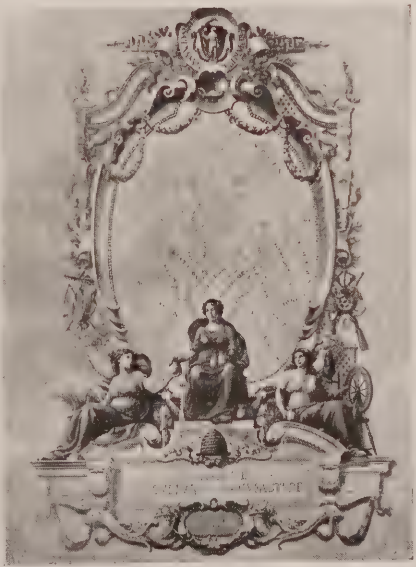
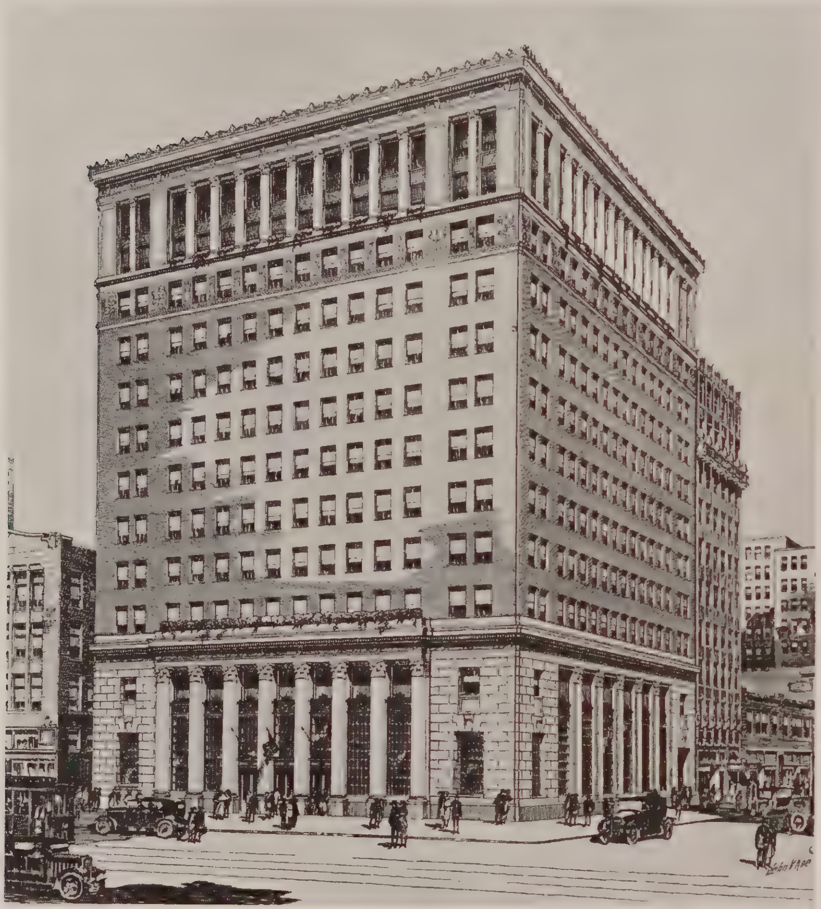
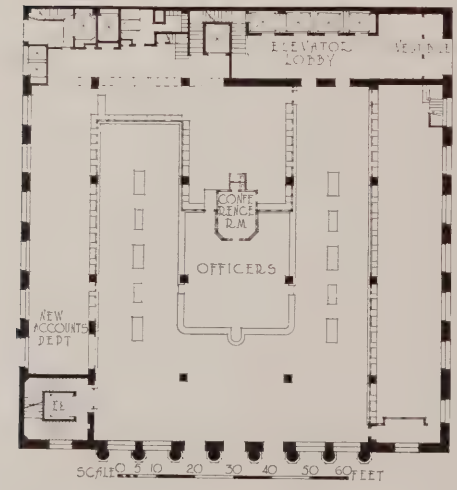


Fig. 10. Ceiling Panel
Union Market National Bank, Watertown, Mass.
Dennison & Hirons, Architects

this nature. Architects, as a general rule, make good quarter-scale drawings, three-quarter scale details, and full size profiles. From these drawings the models are worked up, usually at some convenient scale such as will permit the architect to judge the composition as a whole. The sculptor then builds up in clay the model of the ornament at full size. This in turn is criticized by the architect. It is extremely difficult for even an experienced architect to size the true scale and proportion of ornament in detail without the use of scale models. As a practical suggestion, the architect may judge better of the character of scale of the ornament if a small portion of the architectural members surrounding the ornament are always included in the small scale model of the ornament to show the relation of parts.



Perspective View of Exterior



Banking Room Floor Plan

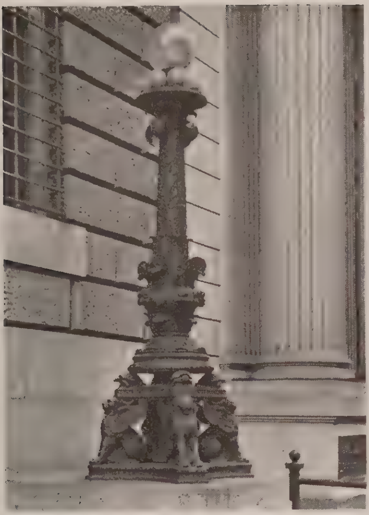
Exterior materials; Terra cotta and brick. The ceiling of the main banking lobby is executed in colors; floor and screens are of marble. Walls and columns are of imitation stone, toned with gold leaf and decorative coloring. From the third to the twelfth floors the building is divided into offices with 30 rooms on a floor. Each floor is so planned that all or any part may readily be given over to the use of one organization.

BANK OF ITALY, LOS ANGELES
MORGAN, WALLS & MORGAN, ARCHITECTS

The photograph of the model (Fig. 12) shows the advantage of study by these means. The belt course at X was too heavy; it was reduced to the proportion shown at Y. The cartouche over the main entrance as first designed was considered too large; the model showed that it could be reduced in size. The panels between the windows over the main entrance show various degrees of depth of relief; this permitted the architect to judge which was preferable. The upper side windows in the rusticated portion in the quarter-scale drawing looked like those shown at R. It was considered that they gave a sense of too great a repetition of the windows above. They were changed as shown at S, and in the executed work they were made somewhat larger. Several studies of the iron facias can be seen between the pilasters. The lettering in the frieze was changed since the letters shown at ANK were thought to be too high and too crowded. The spacing and height were changed as shown.

By this system of study many of the pitfalls of the architect may be avoided, and the finished result should be a good example of architecture, this quality of course being dependent upon the architect's ability and training. Contrary to a somewhat common opinion, it is not necessarily expensive for the architect to study his building in this manner, because much time may be saved by making accurate judgments from a three-dimension model study as against much more inaccurate judgment from two-dimension drawings.

The foregoing may serve to give an idea of the problems facing the architect in the designing of bank buildings, and



Detail of Exterior Lamp
York & Sawyer, Architects

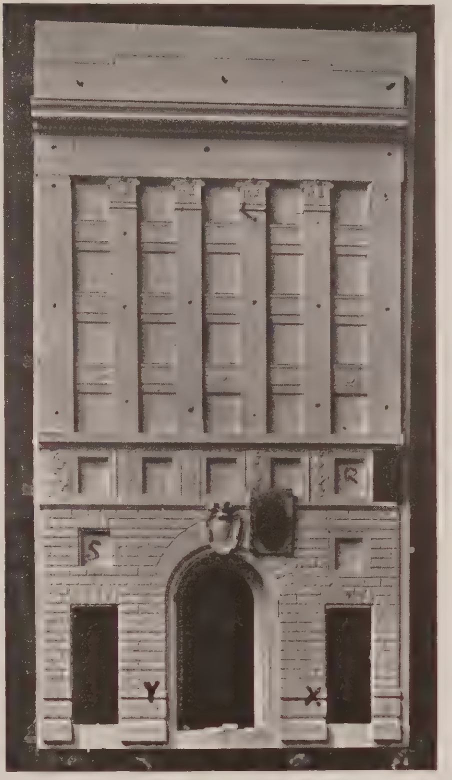
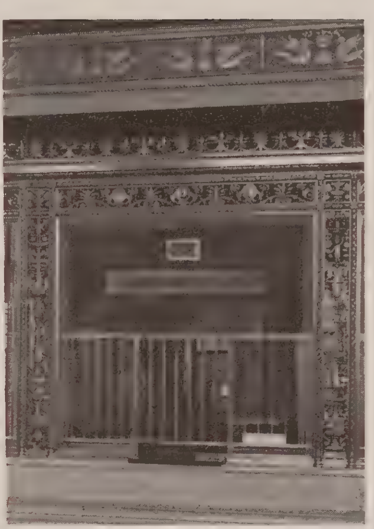


Fig. 12. Model of Bank for Study
See References in Text

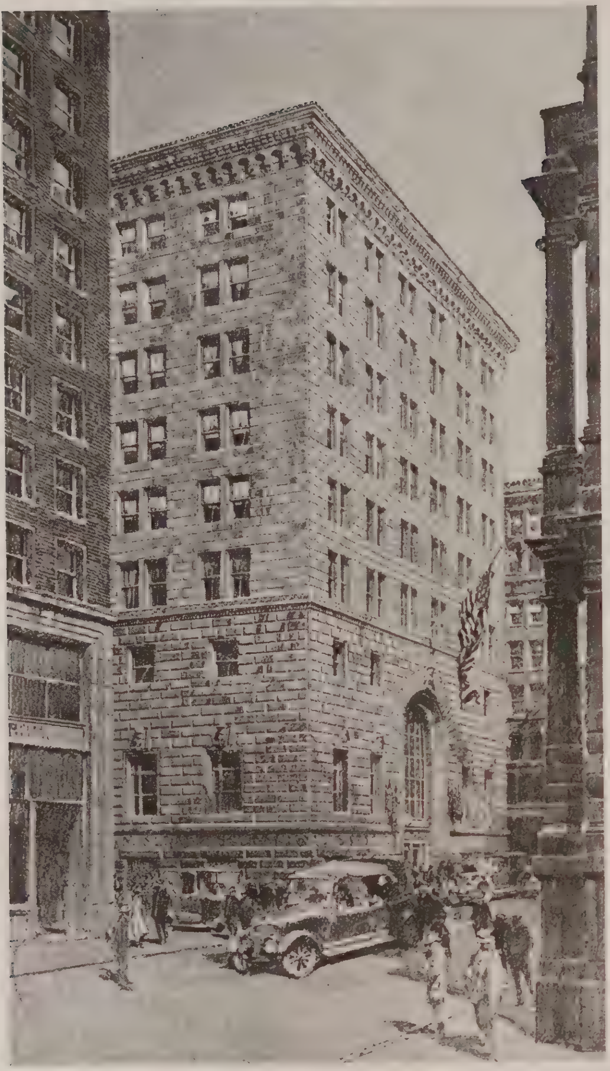


Detail of Bank Screen
Albert Kahn, Architect

it may also suggest useful methods of study. Perhaps it is digressing somewhat, but it may be fitting to mention in this connection a reason many of the banks throughout the country are not better planned and better designed. The fault lies largely in the fact that the banking communities are not educated to understand the function and necessity of employing the thoroughly trained type of architect if it lies within their power to engage such a one. In many cases throughout the country the banks have employed firms which operate under the title of "contracting designers." The employment of such firms means that the bank officers are relieved of all worry from the time the first line is drawn on tracing paper until the building is completed, even to putting the ink in the inkwells. This is an unfortunate condition of affairs because it spells a lack of intelligent co-operation between the banker and the architect. If one is to gauge the progress of our architecture as seen in our public buildings, it must be evident that a greater and greater understanding of the function, necessity and responsibility of the trained architect must be gained by the public in order to insure further advancement.

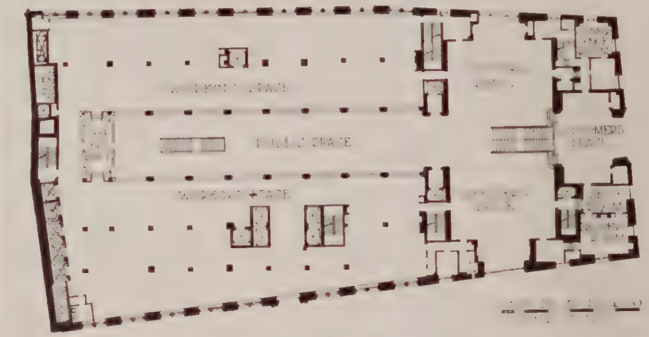
There is, unfortunately, a habit prevalent in many architects' offices today of executing work with too great a speed. Entirely insufficient time is frequently allowed for the study of the architectural problems.

Dennison & Hirons, Architects

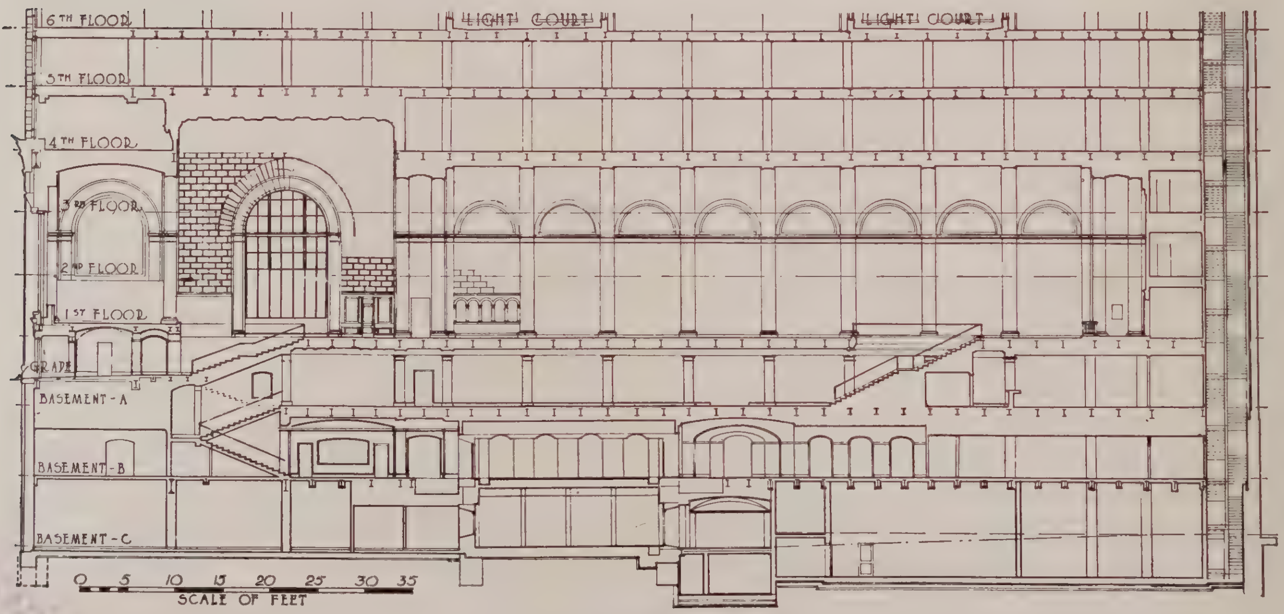


Perspective View of Exterior

THE building for the First National Bank, Boston, now in course of erection, illustrates a new tendency in bank planning by which economy of valuable space is effected without loss of the architectural dignity which should characterize the quarters of an important financial institution. The main entrance gives immediate access to the officers' room, 50 feet deep, 100 feet in width and four stories in height, while just beyond a vaulted space, 28 feet wide and three stories in height, extends back into the building, the side walls containing the wickets of the tellers. Upon mezzanine floors back of these walls and within easy communication with the tellers are the clerical and working forces of the bank. These mezzanine floors are so planned that portions of them may be leased to tenants until increasing business requires their use by the bank. Apart from economy of space this plan effects economy of decoration owing to the greatly reduced area of walls and ceilings in the main banking room. The main entrance is at grade level, halfway between the levels of the first and basement floors, this making the secondary banking quarters on the basement floor level fully as accessible to the public as the main floor.



First Floor Plan



Longitudinal Section

First National Bank, Boston

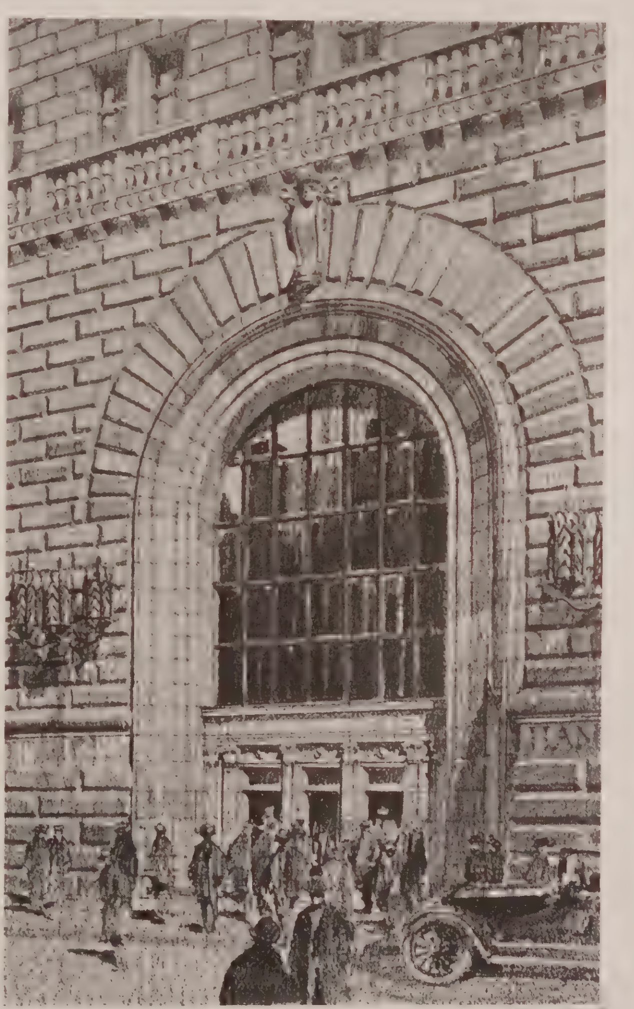
York & Sawyer, Architects

The Planning of Banks

By PHILIP SAWYER
Of York & Sawyer, Architects, New York

WHEN the development of steel construction and the perfection of the elevator enabled us to go into the air with our buildings, it was some time before we readjusted our minds to the new conditions and appreciated that in designing a building 20 stories high, neither repetitions of two- or three-story buildings nor any other pile of sectional bookcases would prove as satisfactory as a clean shaft with as much of a base as our street conditions and the provision of shops and entrances would allow, and with some termination other than the heavily projecting cornice which can no longer have any adequate relation to the height of the wall. The St. Paul Building and the "Tel. & Tel." illustrate the old conception to New Yorkers, while the Bush Terminal and the 40th Street Building show a modern tendency which has so far reached its apotheosis in the Woolworth. More than 20 years of study and experiment have gone to attaining this result.

In bank planning also, the problem itself has changed from year to year. As the banks have grown and their organizations have developed, new solutions have been arrived at quite different from the old, although not so conspicuous as the newer skyscrapers. The fundamental change however, is in the attitude of the banker himself and of his architect toward the problem. Many institutions have grown so fast during the last few years; their needs have become so complicated, and the alterations caused by their growth so frequent that in many banks nowadays there is at least one official who has had an intimate and thorough experience in building and who perhaps, retaining a boyish enthusiasm for mud forts and dams in brooks, really loves it. Such a man is in a very different position from the banker of not so many years ago who called in an architect, gave him a survey and told him to plan a building into which, upon its completion, the bank would proceed to move and arrange itself as best it might. The architect, too, is less contented nowadays to accept as definitive information a mere memorandum of areas required, based on the bank's existing arrangement, and he has come to understand that if the organization is not a success in its new quarters, the fact that he gave them exactly what they asked for does not help him much in developing his practice.


Detail of Main Entrance
First National Bank, Boston
York & Sawyer, Architects

President Lowell, in speaking at the Harvard Club years ago, said that in the solution of any problem the work is half done when a clear and logical statement of the problem itself has been achieved, and while this has been said many times before in different forms, it cannot be repeated too often that the most important work in bank planning is that which is done before the bank is planned, without reference to the actual size of the lot or the number of stories which it is proposed to build, or the style of architecture or the cost. If the banker or the architect or the equipment specialist, or—best of all—all three can arrive at a working organization of the bank, define it on paper in such a way that the functions, the public contacts (taken over a considerable period by actual counts) and the inter-relations of every department are shown and their possible development or growth adequately provided for, diagrams can then be prepared, defining accurately these relations, vertically and horizontally, and once the problem is so stated it is hard to go wrong, for, even if these requirements do not admit of perfect fulfillment within the area of the lot, within the limits of the possible floor areas, the height or the cost, the actual plans, modified as they must be to comply with these limitations, will still tend to be better than they would have been had the building been planned first and the organization packed in it afterward, simply because the diagrams show the best solutions that can be evolved, and every move is toward that rather than being a mere attempt to install as nearly as possible a development of the existing arrangement. Not only can a better result be obtained in this way, but it is far cheaper, since the progressive changes are more easily and quickly made in tables or diagrams than in modifications of architectural drawings, and 25 years of bank planning bring us to the conclusion that the more work that can be done before the planning of the bank itself is undertaken, the quicker, the more efficient and the more economical will be the building, the better it will fit the requirements, and the more efficiently and economically the organization will work in it.

When a bank has determined upon a new building, it has a wonderful chance—which it often foregoes because it is so busy with its routine work and because there is perhaps no one officer detailed to take it up, to look into the general conditions which confront it, to determine which of its departments it is most desirable to develop, and to perfect its own organization. To this end it is becoming more and more customary for the officer or the building committee in charge of construction to go about the country, visiting and studying other institutions and endeavoring to obtain, so far as possible, complete information upon everything that may bear on the development of the bank's own organization and work as well as its physical arrangement, equipment and construction. In making such a trip the committee often visits also the offices of those architects whom it is considering for the appointment; or, an architect being selected, he travels with the committee, making his own notes on everything that seems to him to be relevant. All this tends to detach the committee from the idea that the new bank will be most successful if it is merely an enlarged copy of the old, or that it is safe to go ahead on their own way of doing things without finding what others may have developed. If the architect accompanies the committee on such a trip, he has not only the opportunity of refreshing his knowledge of what is being done, but to arrive, after a few days of constant contact, at a more sympathetic understanding of the point of view of the committee than he might get from some months of ordinary working relations.

If the study thus far has been thoroughly done, it will present some results which may be considered surprising. It will be found, perhaps, in the case of a savings bank, that it is not necessary to put all the officers on the main floor of the bank in the traditional position behind the working space, and perhaps the higher officers will be better situated on a mezzanine or gallery, if the room is of considerable height, overlooking the whole first floor, enabling them to see at a glance when any congestion occurs or there is an unusual delay in the service of the public. In the case of a commercial bank or trust company, it may appear that the intimate relations necessary in a small bank between the executive officers, the loan clerk and the tellers are no longer a controlling factor, and that since these higher officers do not function in direct connection with the working force, there is no longer any object in preserving such contact and they are better placed on an upper floor, where their work is less subject to interruption. This development, often forced upon a bank by space limitations, is now recognized in a few cases as desirable, and where in the beginning these officers were placed on the second floor, with a special elevator, one sees now that if the public takes the elevator at all, it is as easy to ride 40 seconds as 15, and the higher officers may be placed on the top floor as well as on the second. In the larger cities such a situation, in light quarters, high above the dirt and noise of the street, far cooler during the summer months, is certainly a desirable development.

It will usually be found in preparing the first tables or charts that a proper arrangement of the ground floor, with provision for the growth of the departments placed on it, will tend to exclude everything which can be placed elsewhere. Electrical devices for the duplication of written orders have made it possible, and it is often desirable, to put the bookkeepers upstairs in lighter and quieter quarters than can be provided for them on the street level. The trust department is frequently placed on an upper floor and given something of the intimate or homelike character which it has in some European banks and made to look less formal than the main banking room below. Departments handling such work as certifications, where the contact is largely with runners from other banks, may also be placed in an accessible basement, and this element is thus separated from the clients of the bank.

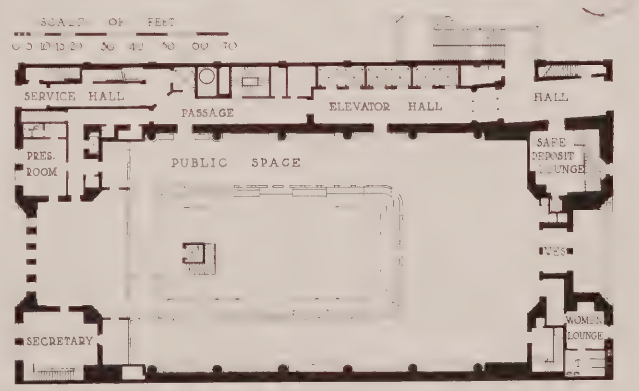
Safe Deposit Department. Since, as has been said, it is desirable to keep away from the first floor everything which can be placed elsewhere, and since a modern safe deposit department requires a large area, it is now almost universally placed in the basement. In general, the public space in such a safe deposit section should be reached by as liberal a stairway as the plan will allow and also by at least one elevator from the banking room floor. This elevator, serving the vault, may also go higher than the banking room floor, serving mezzanines or upper floors of the bank to which it is necessary to give the public access; or, in the case of an office building, several of the main elevators of the building may be carried down to the vault floor, although this is undesirable in a high building, since it tends to interfere with a smoothly running schedule of the cars. In the case of a small vault, provided with a single door and ventilated through an emergency opening, the public is shown into the vault and led out through the same door to the space within the protective grille from which the coupon booths open. In the case of a larger vault, a second door opposite the first is often provided, and the boxholder is locked out through this into corridors leading to the coupon booths which can be reached only after passing through the vault. The vault thus forms a sort of double-locked vestibule to the coupon booths.

For a man in a hurry, it is well to provide as near as possible to the vault door some shelf or desk upon which he may place his box if he merely wishes to open it for an instant, since it is not considered good practice in this country, although almost universal in Canada, to allow him to open it in the vault itself. Next in proximity to the vault door should be the smaller coupon booths for individuals, since they are most frequently used. Other rooms should be large enough for two or more people, and a few larger rooms which will accommodate a business or trustees' meeting should be provided. In one New York bank, such a room is constantly used as an office for the transaction of business by a depositor who prefers this location to any other. As this entire vault area gets no natural light or ventilation, this item must be carefully planned for, and it should be borne in mind that the vault must be ventilated separately with cooler air to compensate for the heat generated by its lights and by the people in it, and that this air must be more frequently changed than in the case of the larger areas outside of it.

Like everything else in connection with the bank, the vault must provide for growth, and as nothing is more unsightly than a large vault partially filled with irregular stacks of safe deposit boxes, the best provision is to have these tiers project from the walls uniformly on either side in the beginning, and later to add to them symmetrically, completing the side aisles gradually from the back so that the vault will always have a uniform appearance. In the case of the Columbia Trust Company vault the floor of black mosaic is divided by strips of brass inlay and the ceiling is paneled in steel with brass borders, so that whenever the safe deposit boxes are extended it is necessary only to set the black marble base out to the line already fixed by the floor border, and to fit the steel cove which connects the new tier of boxes with the ceiling to the existing ceiling panel, in order to have the addition present exactly the same finished appearance as the original tier of receptacles.

The front of this same vault shows a treatment of the vault door and its surrounding steelwork which is more satisfactory than the usual installation of a narrow steel architrave around the door, and the larger steel surface thus exposed gives the vault an unusually impressive appearance of solidity. In this case, the black floors of mosaic inside the vault and of terrazzo in the public corridors outside are in the reflected light of the lamps almost exactly the steel color of the vault itself, and this creates an unusually harmonious impression. In the Columbia vault, the base of black marble with a slight cove which is edged by the brass floor border, the brass hinges on the steel boxes, and the brass panel lines on the ends

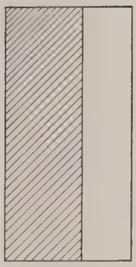
Perspective View of Exterior



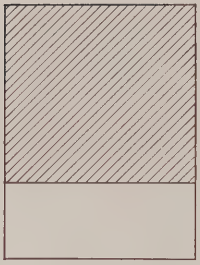
First Floor Plan

Bowery Savings Bank, 42nd Street Branch, New York

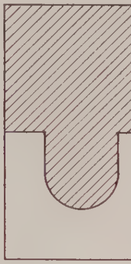
York & Sawyer, Architects



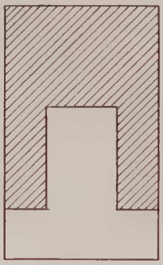
Typical Plan I



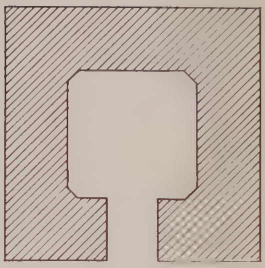
Typical Plan II



Typical Plan III



Typical Plan IV



Typical Plan V

TYPICAL PLAN I	
Riggs National Bank, 14th and Park Road Office, Washington	**75**
Citizens National Bank, Covington, Va.	**86**
TYPICAL PLAN II	
State Sav. Bk., Hartford	**65**
TYPICAL PLAN III	
Excelsior Savings Bank, New York	**78**
Hartford-Connecticut Trust Co., Hartford	**67**
Bowery Sav. Bk., N. Y.	265
First Nat. Bk., Boston	264
Eliot Savings Bank, Roxbury, Mass.	295
TYPICAL PLAN IV	
First National Bank, Wallingford, Conn.	**81**
Seacoast Trust Company, Asbury Park, N. J.	**82**
Security National Bank, Sheboygan, Wis.	**73**
Elyria Savings & Trust Company, Elyria, O.	**71**
Suffern National Bank, Suffern, N. Y.	**79**
United Sav. Bk., Detroit	**88**
Chestnut Hill Trust Co., Chestnut Hill, Pa.	292
Washington Trust Co., Westerly, R. I.	266
Ticonic National Bank, Waterville, Me.	296
TYPICAL PLAN V	
First National Bank, Wichita, Kas.	**76**
Farmers & Mechanics Nat. Bk., Georgetown, D. C.	**83**
National Exchange Bk., Augusta, Ga.	**87**
National State Bank, Elizabeth, N. J.	**69**

Classification of Banks in This Issue under Typical Plans

Light Type Indicates Pages, Heavy Type, Plates

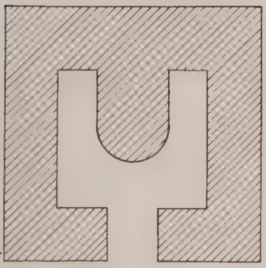
of the box tiers at the ceiling make the whole thing harmonious, and the black is used again in the handles of the larger boxes and in the dials on the combinations.

As it is desirable that the character of the safe deposit department should be as solid and substantial as possible, it is well to "vault" these corridors serving the safe deposit booths with arched ceilings, and if these are carried down on top of the face of the coupon rooms so that these passages look like masonry tunnels in which the booth room doors occur, an impression of solidityis given which is attractive. The booths, themselves, should be individually ventilated and so constructed that at a glance the attendant who inspects each booth after it has been used can see that nothing has been left in it and no paper overlooked. To this end a glass shelf is sometimes provided instead of one of wood or cork. Since most coupon booths are small and it is necessary to move the chair in getting in or out, the chair should be as light as is consistent with durability and it should, of course, have rubber buttons to make it noiseless on a hard floor. In the larger vaults, a women's room is often provided, and toilets for men and for women.

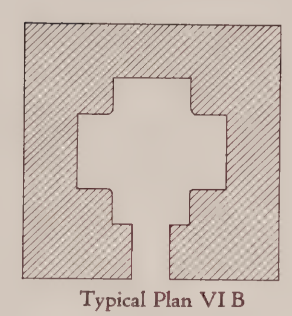
From a protective point of view, mirrors are often placed in the vault at the ends of the alleys between the tiers of boxes and sometimes in the booth room corridors, and sometimes the whole vault is surrounded by a narrow observation gallery from which one may look down through a series of narrow glass panels close against the exterior wall of the vault, and by means of mirrors set diagonally see horizontally under the vault between the beams which support it the electric lights at the farther ends of these spaces. In some cases, where the floor above the vault is not controlled by the bank, its construction is kept away from this floor and this space also is readily inspected from the observation gallery by means of mirrors set overhead. If this observation gallery is continuous around the vault, and if its corners are provided with vertical, diagonal mirrors, a watchman standing at the door, when the doors are closed, can look across the face of the vault in either direction and see all four sides of the vault.

Modern vaults almost invariably have electrical protection on their bolt contacts which, once thrown in, upon the closing of the doors, will give an alarm in the bank, in the central station of the electrical protective company, and perhaps also in the nearest police station if these bolts are thrown out. Often the whole outside surface of the vault is also covered with a mesh of low tension wires so that no inch of its surface can be tampered with without sending in an alarm. Watch stations are established which assure that the watchman of the bank, and in some cases the outside patrol, must turn in signals at stated intervals, and in one case in New York the outside watchman, unlocking a bronze plate in the basement wall of the building, can look from the street diagonally down through a dozen feet of masonry and see that the vault door is closed, lighted and undisturbed.

Typical Plans. It is interesting to consider how few fundamental plans there are when one comes to the division of a banking room between the public and the working spaces. In 1905 the writer published the six typical plans shown on pages 266 and 267 which still seem to cover the subject. It is obvious that Plan I is applicable to a deep or square lot —not to a wide, shallow lot, because in the latter case the counter screen is too short. Plan II, on the contrary, does not work on a deep, narrow lot, as it gives an insufficient counter. Plan III is identical with Plan II except that a projecting tongue in the public space gives more counter length wherever the lot is wide enough to admit of this working space, with the public area flanking it on either side. Plan IV is in the same way a modification of Plan II, and, like Plan III, requires a sufficiently wide lot to admit of the public space being extended in between two working areas. Plan V is a modification of Plan IV and is applicable wherever the area is large enough to admit carrying the working space completely around the public space so that the only



Typical Plan VI A



Typical Plan VI B

Typical Plan VI A
Seattle National Bank, Seattle **84**
Bank of Italy, Los Angeles 260

Typical Plan VI B
Rhode Island Hospital Trust Co., Providence 257
Norwood Trust Co., Norwood, Mass. 294
Fidelity & Columbia Tr. Co. and Citizens Union Nat. Bank, Louisville 267

Miscellaneous Plan
Greenwich Savings Bank, New York 271

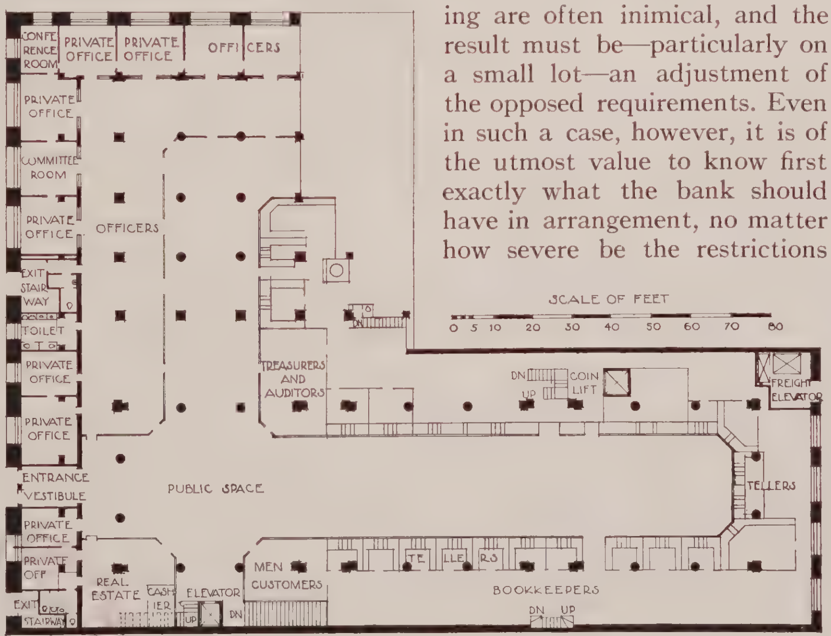
break in it is made by the entrance. The two plans numbered VI show combinations of the others. These, of course, occur only on rather large lots.

In considering Plan I it is obvious that if it is lighted overhead, it makes no difference which side is occupied by the working space and which by the public. If, however, this plan is also lighted from one side, it is a grave consideration as to whether the comparatively narrow public space should be placed on the light side or along the dead wall away from the light. In the first instance, the patrons have the best of it, and the tellers face the light. If the building is on an open space and this lighting is horizontal, it may be objectionable to have it come in the faces of the tellers, while the customers, standing against a bright light, are perhaps almost unrecognizable in the shadow. If, however, the light comes from a narrow city street and is so poor that the tellers will work under the artificial light of reflectors set in the head of the counter screen, their position is not so important, while the public check desks placed, perhaps, one in each window, receive sufficient natural light. Between the two arrangements it seems preferable to favor the working force, steadily engaged during the whole day, rather than the customer who is in the bank for a time comparatively short. If there is an office building above, the question usually settles itself, for the elevators are generally placed at about the middle of the dark side, so that if the bank and office building have separate entrances, the bank's will be near the corner and the public space be on the light side; while if they have a single entrance vestibule in common, the public space will be on the inside.

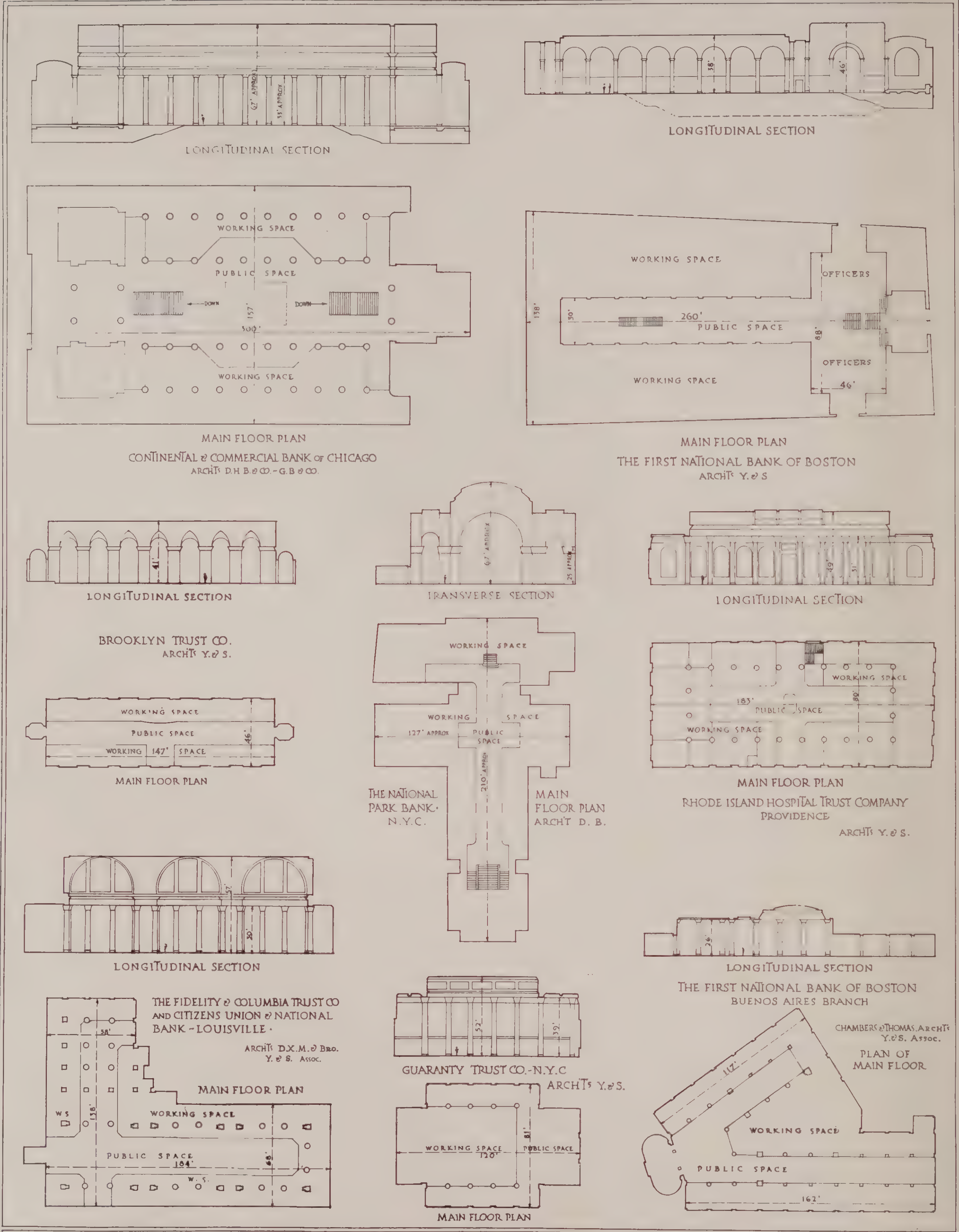
There is wide diversity of opinion among bankers as to the height of banking rooms. On pages 268 and 269 are given diagrams showing the relative areas and heights of a number of recent banking rooms that are of interest for comparison.

Where the Bank Is Part of a High Building. Where the building is to be entirely occupied by the bank and the only access to the upper stories is secondary or only through the bank itself, the plan and design of the banking room, of course, control, and the elevators and stairs may be so placed as to give proper circulation with the least interference with the working plan and the architectural character of the room. Where, however, the bank is merely an incident in a high building, and the importance of the rentable areas above it outweighs the desirability of the best possible banking room, it is often necessary to place the entrance, elevator lobbies and stairs in such a way as to make the planning of the banking room considerably more difficult and even unsatisfactory. The requirements of the bank as to the first floor or as to the lower stories and the requirements of properly planned upper floors with best access and lighting are often inimical, and the result must be—particularly on a small lot—an adjustment of the opposed requirements. Even in such a case, however, it is of the utmost value to know first exactly what the bank should have in arrangement, no matter how severe be the restrictions

Banking Room in Louisville Bank

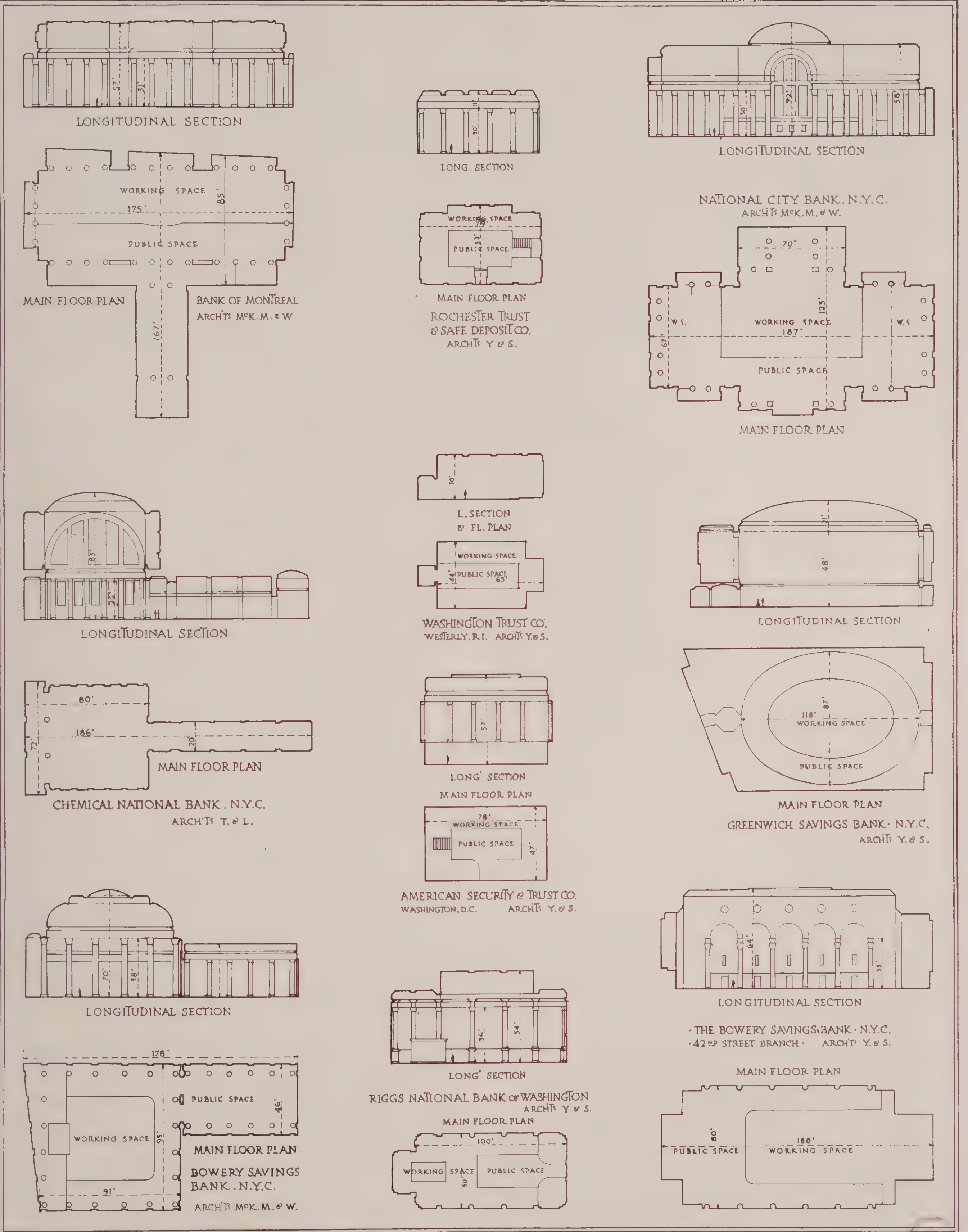


Floor Plan, Fidelity and Columbia Trust Co. and Citizens Union National Bank, Louisville
D. X. Murphy & Bro., Architects; York & Sawyer, Associated



SCALE DIAGRAM SHOWING COMPARATIVE SIZE OF BANKING ROOMS

Plans and sections of banking rooms on these pages are reproduced at the same scale for comparison. It is obvious that a room free from columns or intermediate supports will appear higher than one which is broken up



SCALE DIAGRAM SHOWING COMPARATIVE SIZE OF BANKING ROOMS

The importance of the third dimension, height, always so valuable to the architect, is now being recognized by the banker and the public. As these diagrams show, the newer rooms are frequently impressive in their height and airiness

Entrance to Safe Deposit Vault

Interior of Safe Deposit Vault

Columbia Trust Co., New York, York & Sawyer, Architects

imposed upon the bank by the office floors above.

Recreation; Medical Examination. In the larger banks, as in other institutions employing a sufficient number to justify it, considerable provision is made for the comfort and health of employes. They are given somewhere in the structure itself, or in an adjacent building, adequate quarters,—a development of the old "rest rooms" for men and for women, and in connection with these handball courts, bowling alleys or perhaps a caged room space in which to play handball at noon. In the interests of efficiency, cafeterias are frequently provided, serving at cost the employes of the bank. As it has been found more economical to conduct medical examinations, not only of new employes but as a matter of routine of all those employed in the bank, the older provision of an emergency room with a nurse has developed into a medical unit where periodical examinations are made, records kept, and from which nurses go out to visit employes who may be ill or absent. It is now deemed economical to keep the personnel in health rather than to wait until illness requires attention involving interruptions and loss of time.

Women's Departments. In the last few years, provision for women depositors has become increasingly important. More and more families are run on what has been called "the Irish principle." The German, we are told, asks his wife what she needs for housekeeping allowance, gives her half that and keeps the rest. His is obviously the more important account. The Irishman hands over his pay envelope intact, allows his wife to break the seal, give him the price of a drink, and keep the rest. Nowadays she has a banking account. A trust officer said recently that he would a good deal rather have new women's accounts than men's; that a man is more easily detached by any other bank that offers him some slight advantage, and that he rarely expresses any interest in where his friends bank, while a woman is unhappy unless her friends use the same depository; that once her account is established she is intensely loyal and, finally, that she usually lives the longer, and when she dies there is a trust fund to handle.

As she often comes to the bank in one of the 12 million cars that we are now supporting, it is desirable to provide a separate entrance (on a street where parking is allowed) which leads directly to her department, and, if possible, also to the safe deposit section. Her room or division of the bank is often designed particularly to please her and is furnished with attractive writing desks rather than

LIB

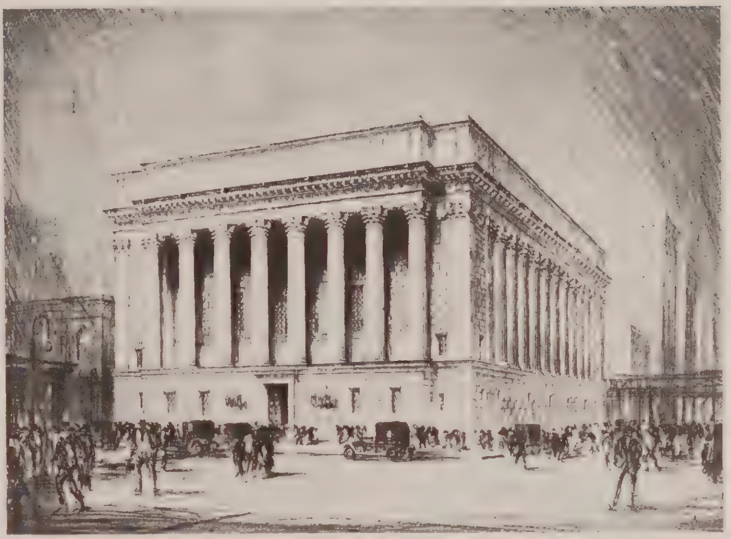
Preliminary Studies for Greenwich Savings Bank, New York

York & Sawyer, Architects

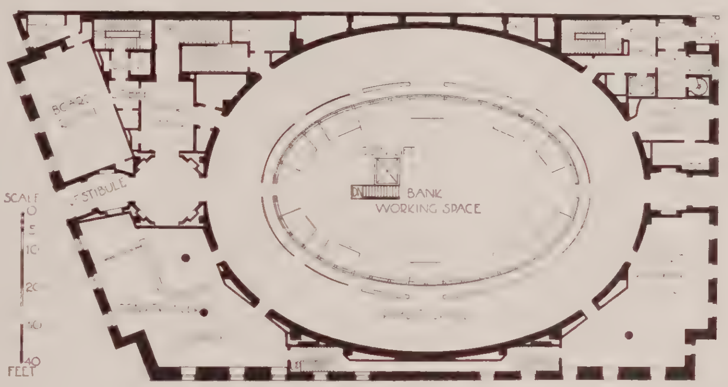
with standing check desks. It is frequently served by separate tellers who may themselves be women. It is often connected with a room where she can rest or read or meet her friends for luncheon. The reported conversation: "Where let's meet and lunch? Let's meet at the Ritz and lunch at Childs'," may now be: "Let's meet at the bank and lunch at the Ritz." Commodious toilets, in connection with this space, and a maid make the thing complete and add much to a bank's popularity.

Lighting. Where the surrounding streets are wide, the floor area not too extended, and a proper design combines the necessary dignity and solidity with a proportion of window space almost factory-like, no skylight is necessary. Where, however, streets are narrow, or the plan deeper than the side light will reach, a skylight is a valuable adjunct, and usually the lighting of the upper floors will lead one to provide a recessed court, which will admit of a skylight centering on the banking room below and serving its central part, remote from the windows. Such overhead light is generally most effective if concentrated in a single area, and the skylight itself should be single even if the ceiling light beneath it is subdivided by beams or, indeed, broken into a series of detached panels, since far more light is thus obtained.

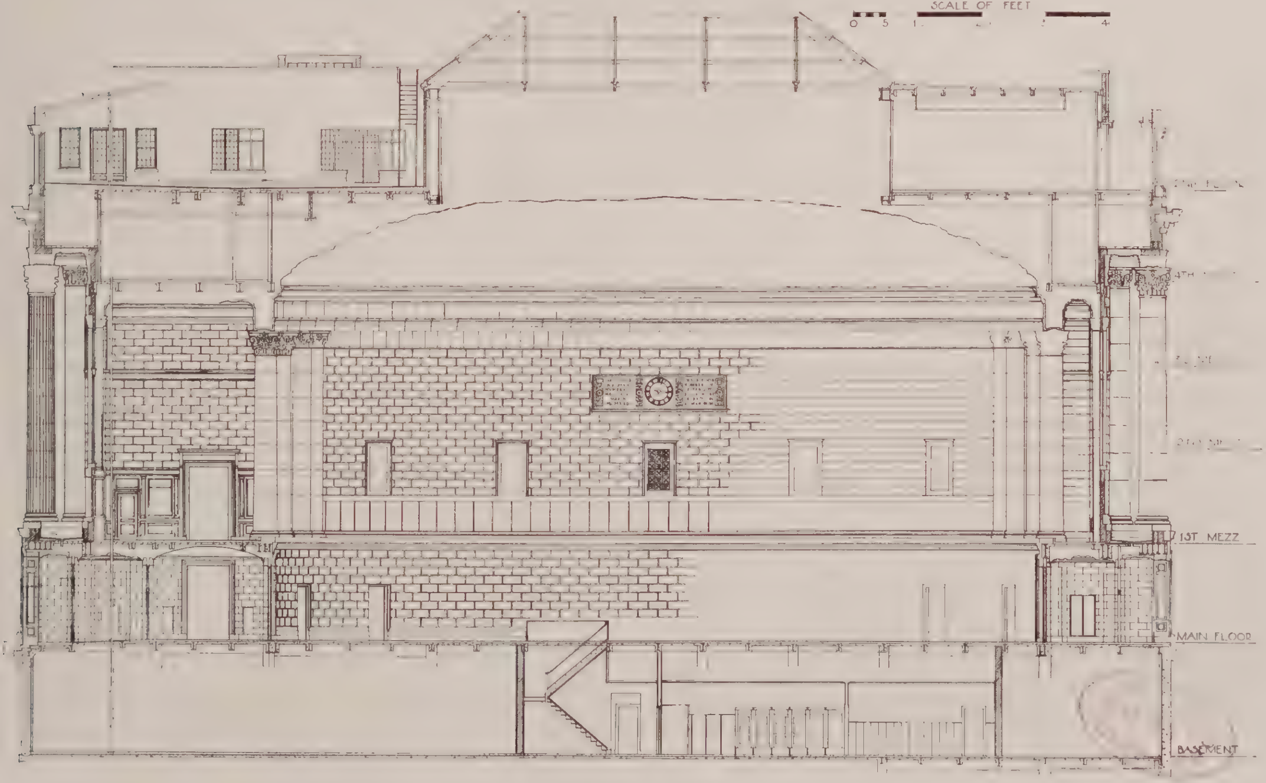
Any such skylight should be placed high



Perspective of Final Exterior Scheme



Main Banking Room Floor Plan



Longitudinal Section
Greenwich Savings Bank, New York
York & Sawyer, Architects

enough above the ceiling light to provide headroom if possible, and one or more movable platforms should be installed to run across just above the ceiling light in order that it may be conveniently cleaned. It is hardly necessary to emphasize the importance of keeping the top of the construction of the ceiling light, its beams, ribs and muntins flush with the glass so as to present a plane to the cleaners without corners or sinkages, or of using a glass which, whatever its texture on the lower side, is absolutely smooth on top. Convenient to this cleaning space over a large ceiling light a slop closet should be provided, and there should be a number of vacuum cleaner outlets, electric or air, according to the apparatus used in the building. The skylight may be either of the usual hip or gable type, wire glazed, or consisting merely of a panel of vault lights in the roof.

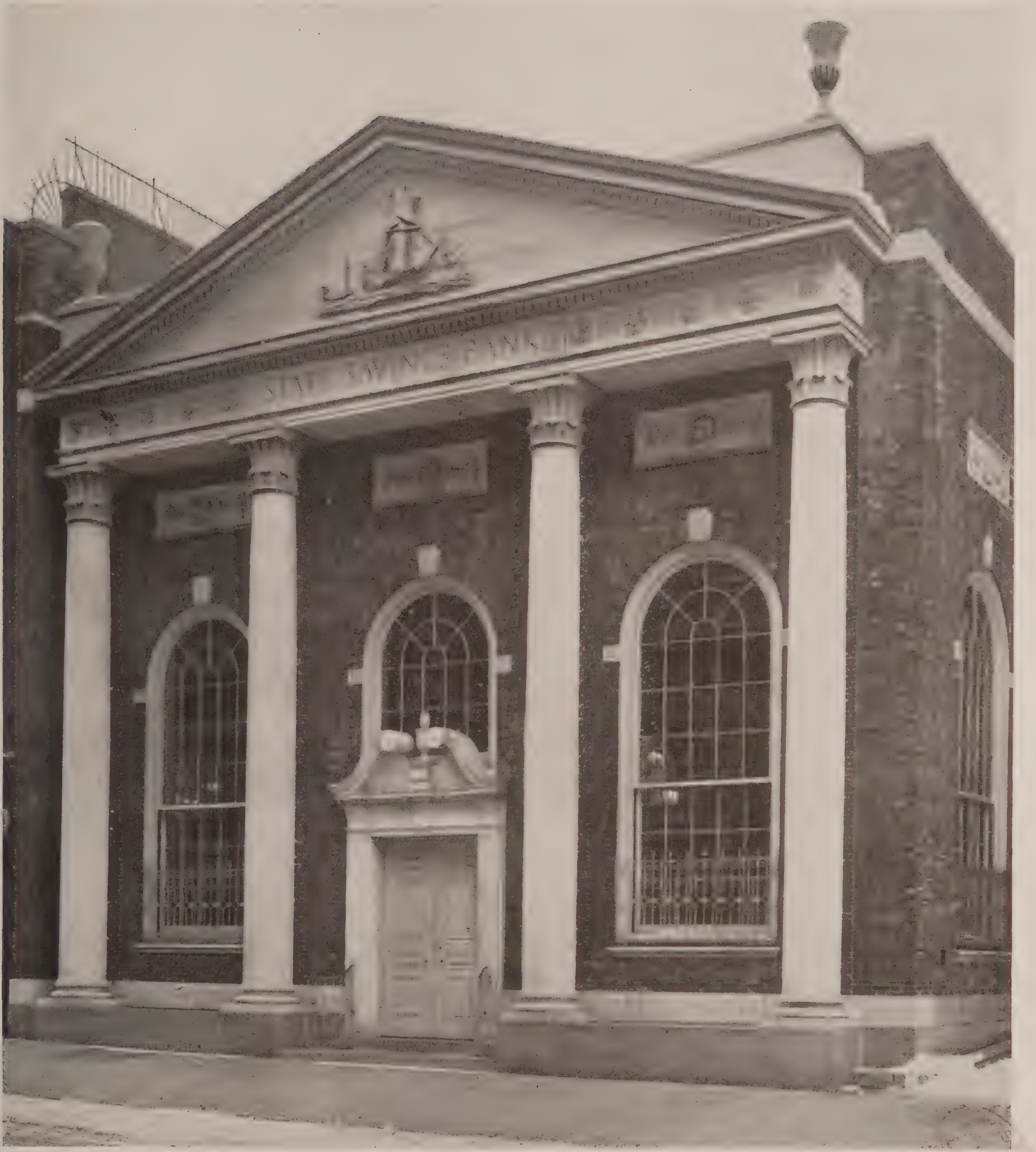
The ceiling light, sometimes domical in form, is usually flat, and the simpler its design the better. In color, too, a uniform tone seems to give better results than the use of colors. If a warm, amber glass is used, it gives the room a glow, pulls together the tones of its various materials, and tends to give a harmonious appearance which it is impossible to secure if white glass is used. In the case of large windows, this amber glass is equally effective not only in warming the gray light of winter to a sunny hue, but in shutting out incongruous and disturbing surroundings and in tending to enclose the room and complete it as small, leaded panes do in a domestic interior.

Entrance to Buenos Aires Branch, First National Bank of Boston
Chambers & Thomas, Architects; York & Sawyer, Associated

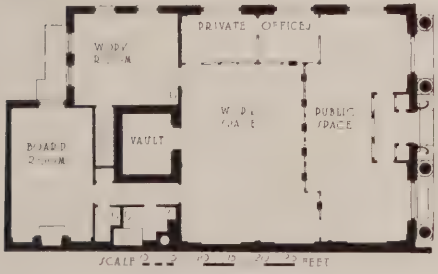
Simplicity. In bank design one looks for simplicity, dignity and durability more perhaps than in any other class of buildings. Just as the banker himself is an important and stabilizing factor in our society, so his building should lead and rightly influence the architecture of his community. The home of a well founded and enduring institution, it is as permanent as anything that we construct. If it houses merely the bank, it must be designed in such a scale as to hold its own among the buildings, much higher, which surround it. If it be a high building, its simplicity and dignity must command among its thronging competitors. Its style and character should be permanently acceptable, not merely reflecting the fad of the moment, since it is built not for this year or decade, but for a long period of time.

And so the banking official who determines the bank's site and its character and who selects its architect and builder, and those who carry out the bank's behests accept a heavy responsibility to their community, to our country and to those who follow us, who will try, in their turn, to do better work than has yet been done.

Preliminary Study for Banking and Insurance Building, Watertown, N. Y.
York & Sawyer, Architects



VIEW OF FRONT FACADE

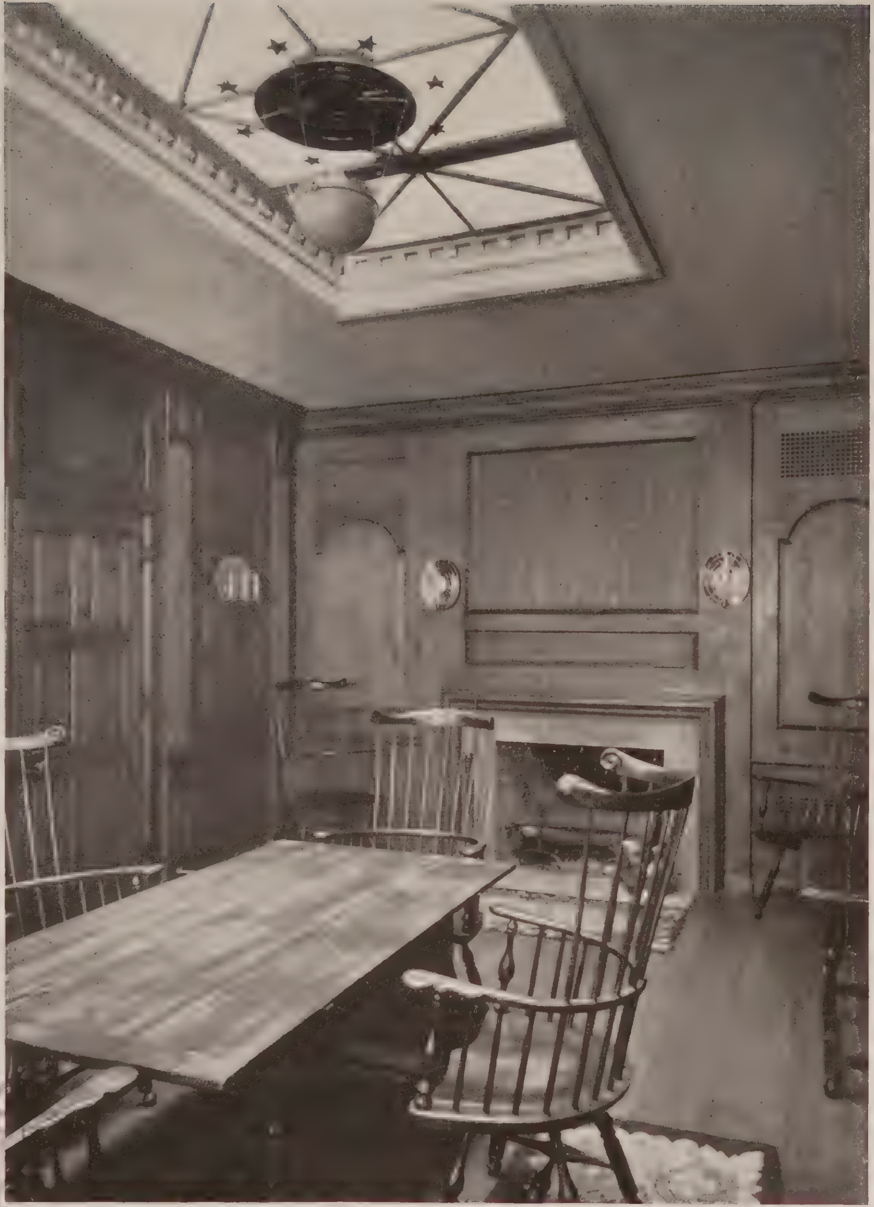


FIRST FLOOR PLAN

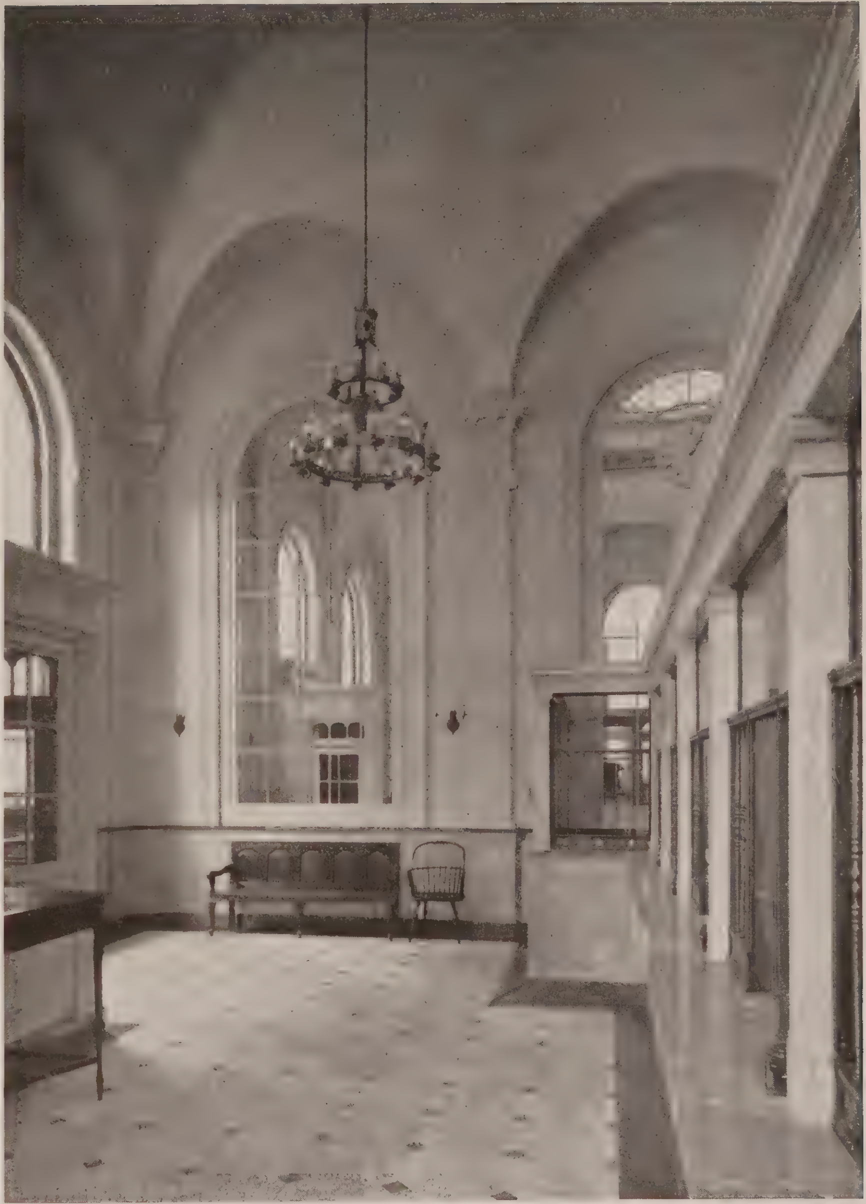
Type of construction, Fireproof; Exterior materials, Brick and marble; Interior materials, Plaster and marble, pine wainscot in board room; Windows, Wood; Counter screens, Marble and wrought iron; Vault and safe deposit provision, Vault for securities; Type of lighting, Direct; Heating, Vacuum steam; Mural painting and sculpture, In pediment is a carved adaptation from an old print of the early Dutch sloops of New Amsterdam, such as used by Adrian Blok, who first explored the Connecticut River in 1614

STATE SAVINGS BANK, HARTFORD

BENJAMIN WISTAR MORRIS, ARCHITECT



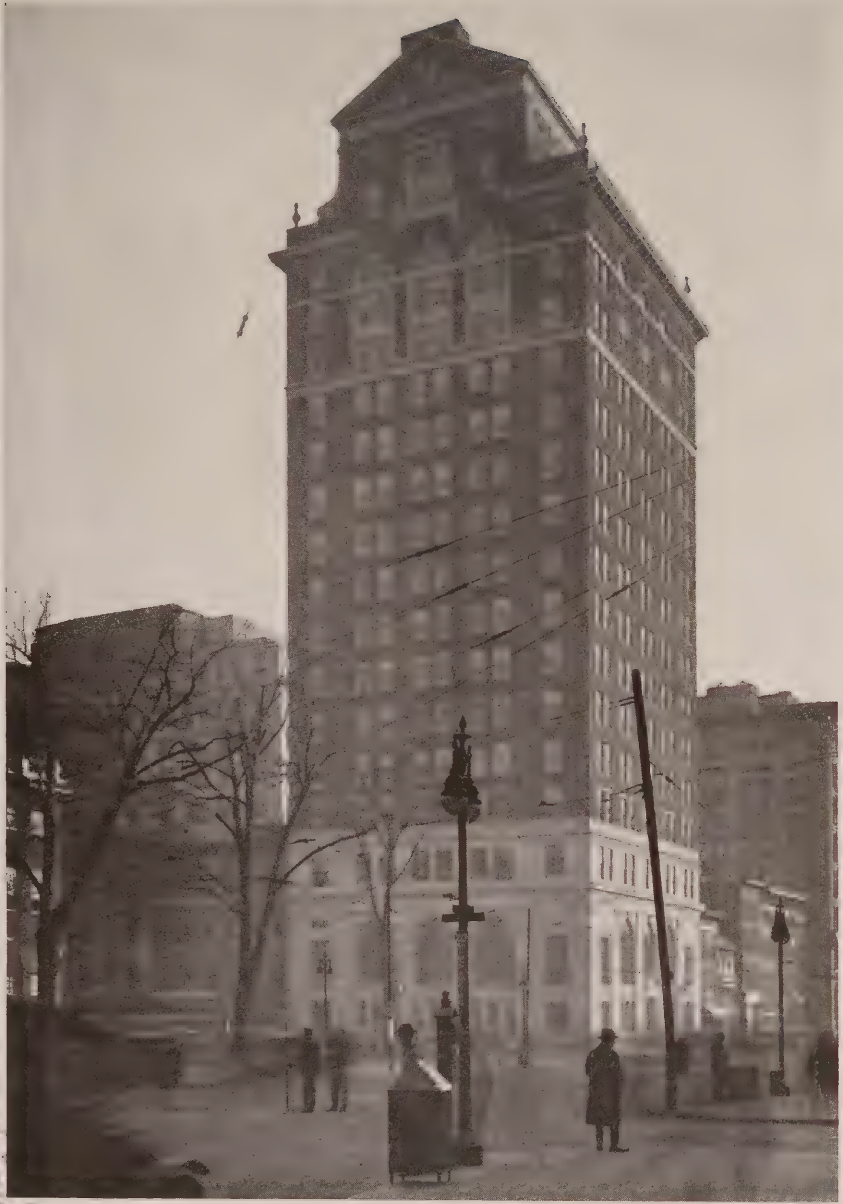
BOARD ROOM



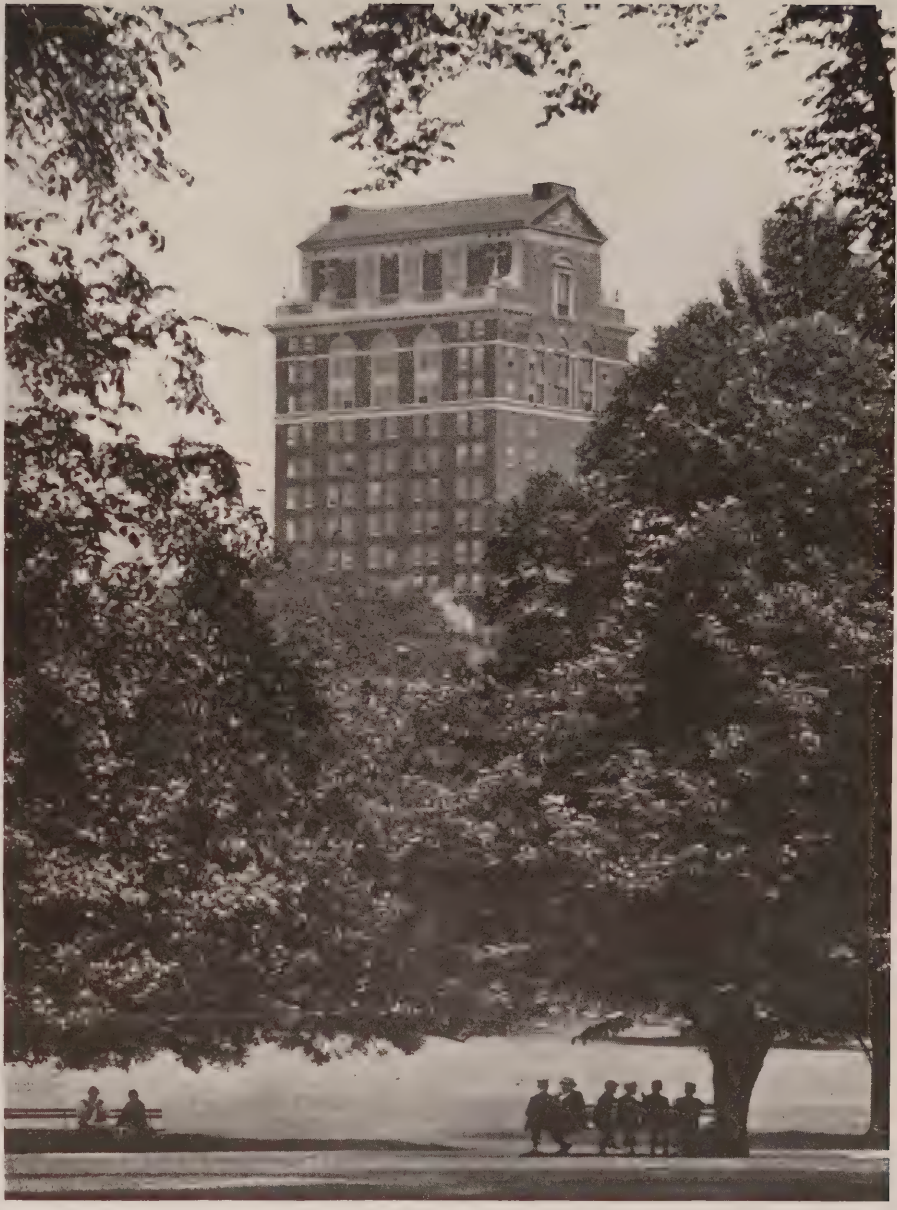
PUBLIC SPACE, LOOKING TOWARD ENTRANCE

STATE SAVINGS BANK, HARTFORD

BENJAMIN WISTAR MORRIS, ARCHITECT



GENERAL EXTERIOR VIEW



VIEW OF UPPER STORIES

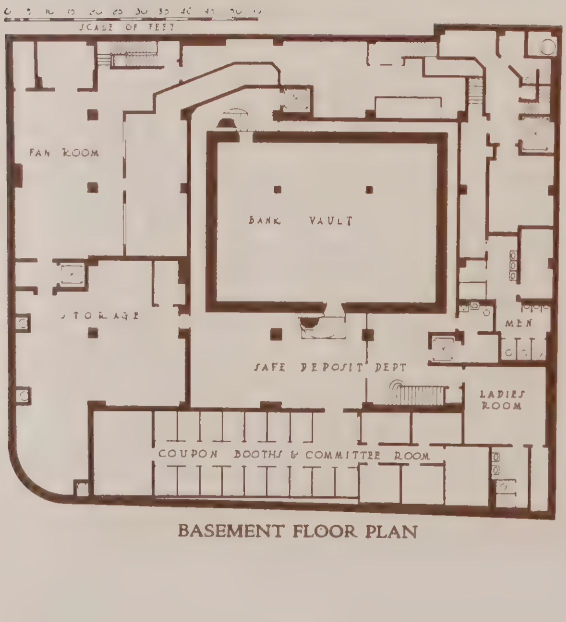
HARTFORD-CONNECTICUT TRUST COMPANY, HARTFORD

BENJAMIN WISTAR MORRIS, ARCHITECT

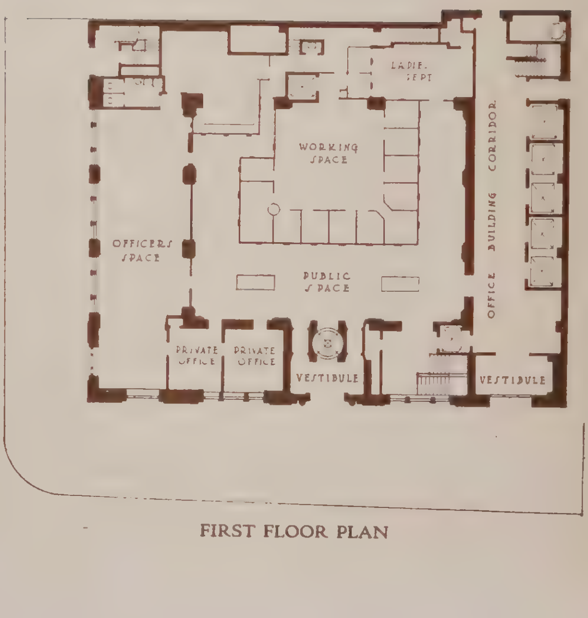
HARTFORD-CONNECTICUT TRUST COMPANY HARTFORD

Illustrations on Plates 67 and 68

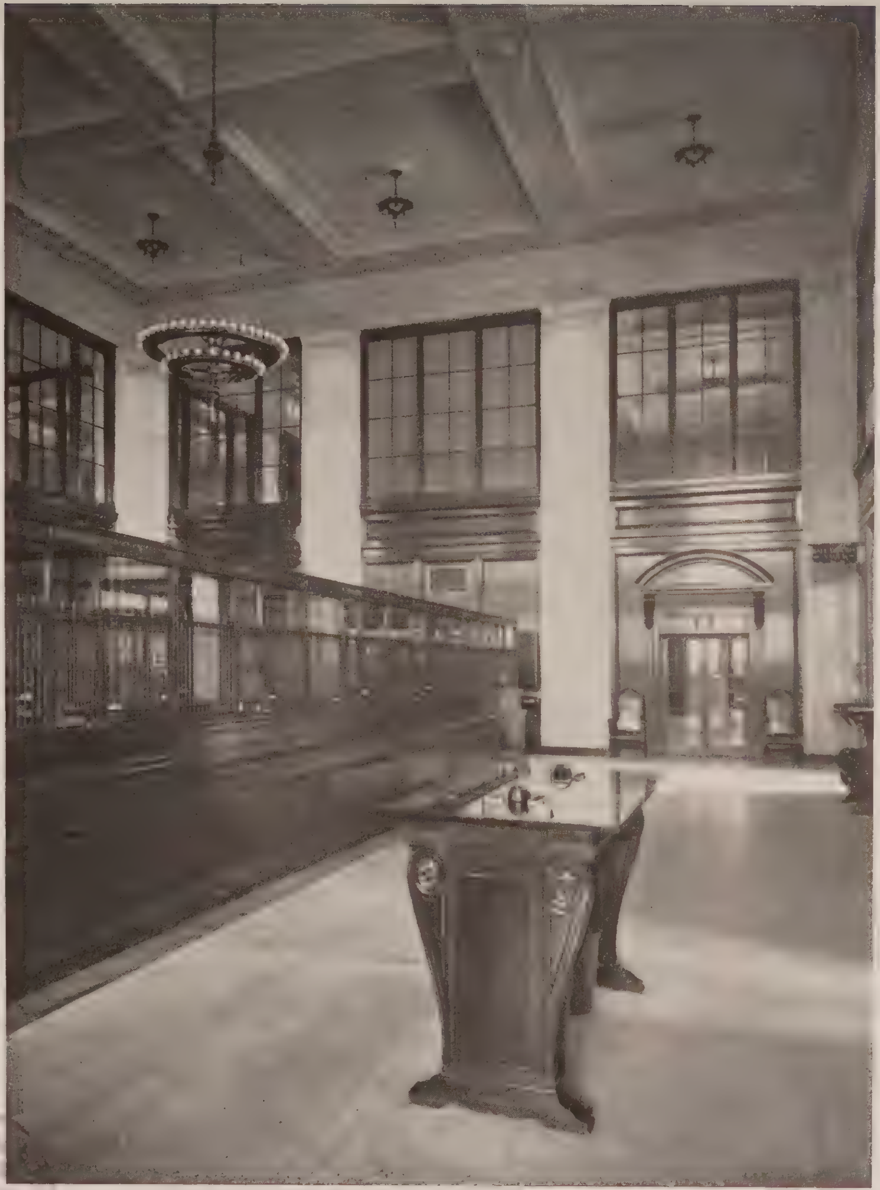
Type of construction. Fireproof
Exterior materials. Limestone and brick
Interior materials. Walnut; travertine
Windows. Steel sash
Counter screens. Wrought iron; walnut
Type of lighting. Direct
Heating. Steam
Date of general contract. November, 1920
Total building cost. $1,833,133.89
Cubic foot cost. 81 cts.



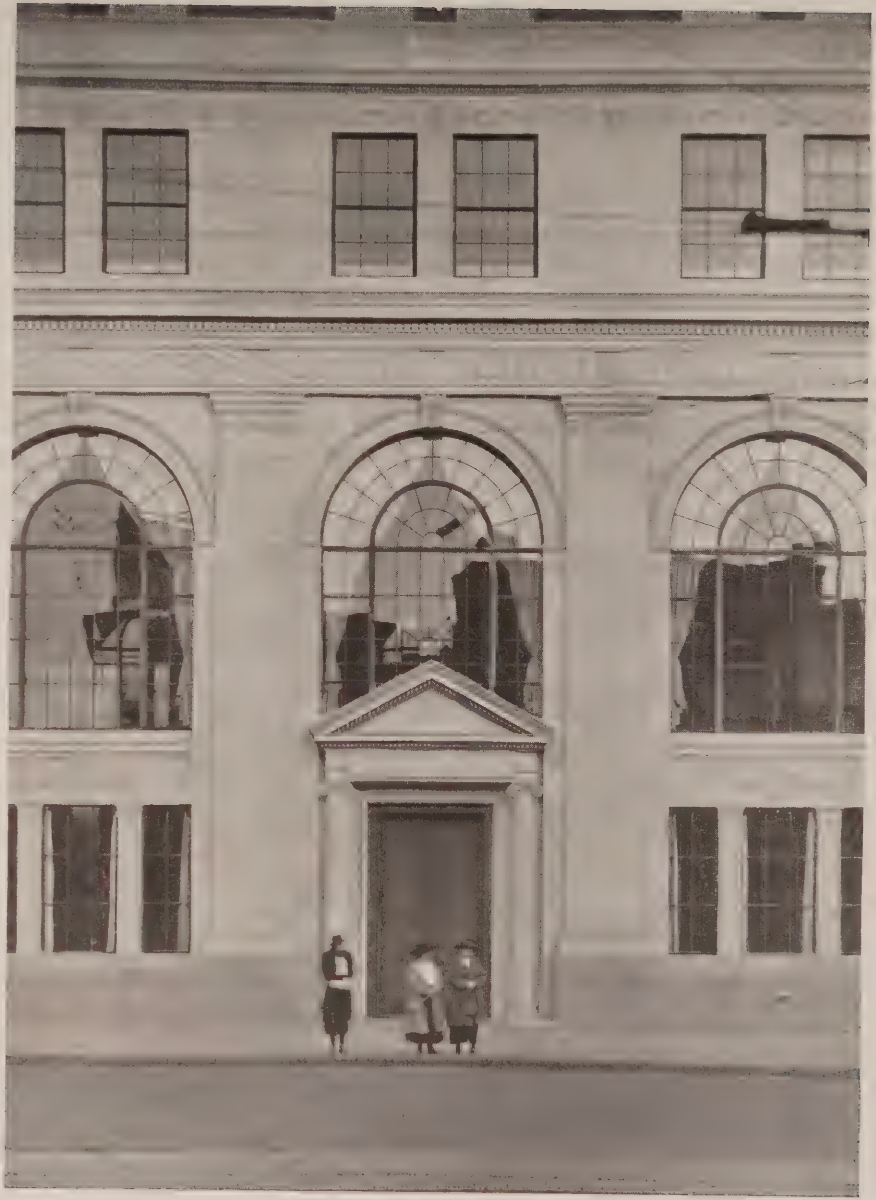
BASEMENT FLOOR PLAN



FIRST FLOOR PLAN



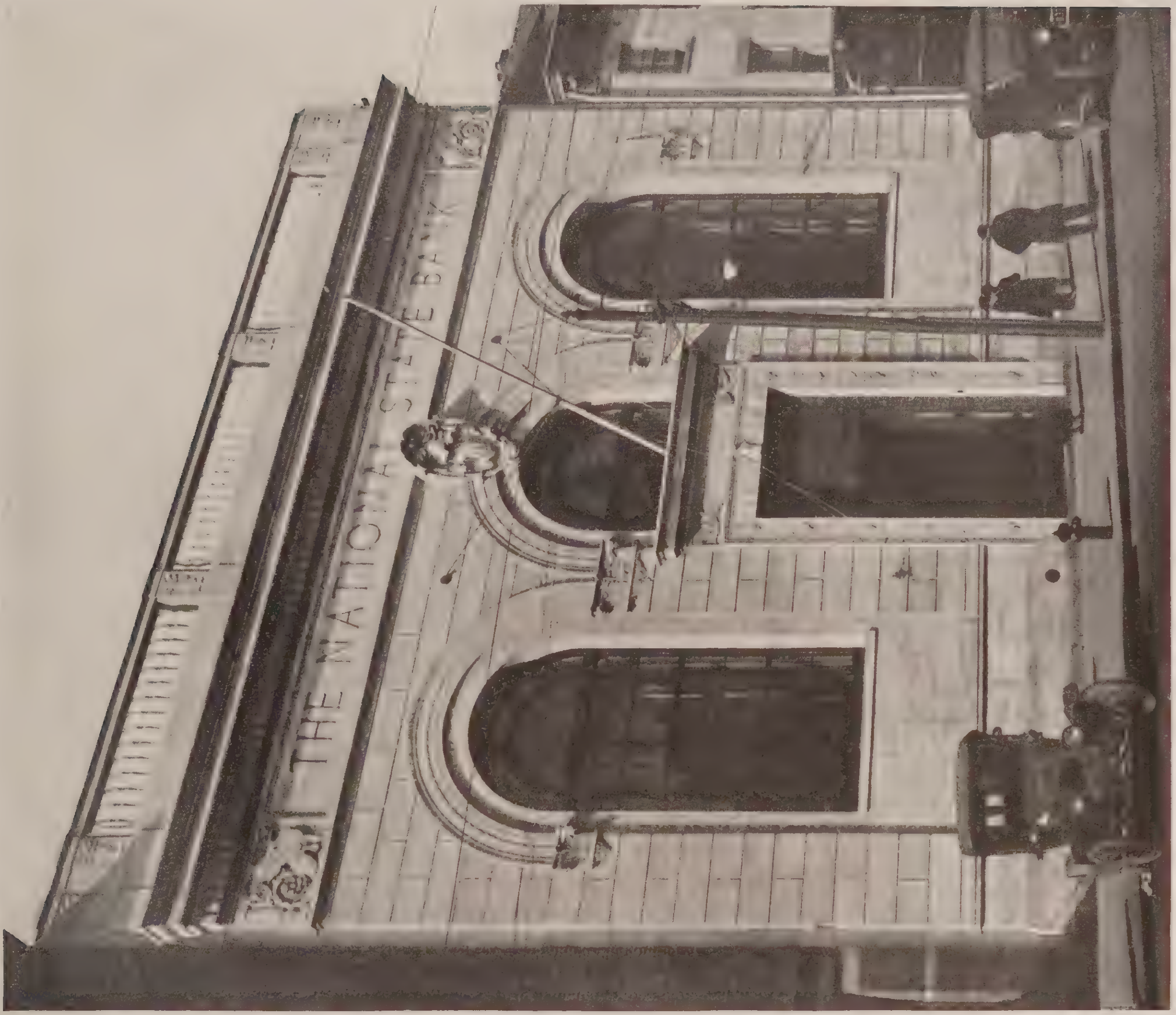
PUBLIC SPACE



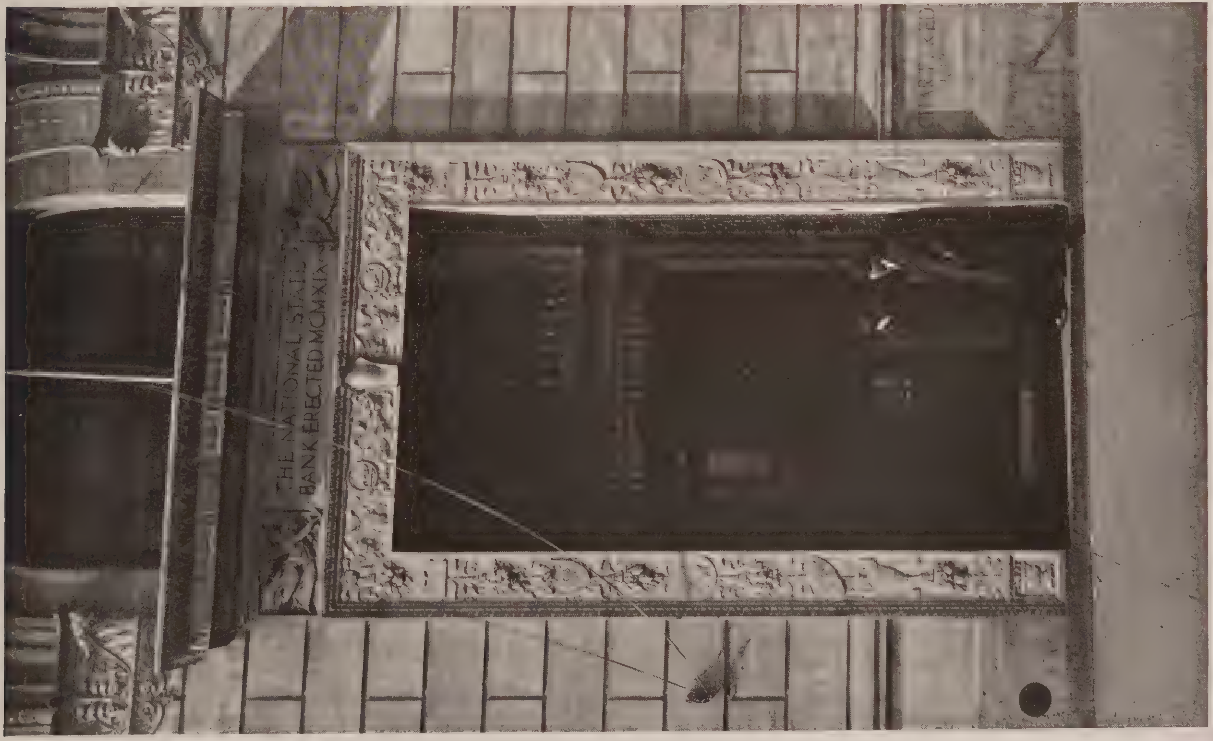
DETAIL OF ENTRANCE FRONT

HARTFORD-CONNECTICUT TRUST COMPANY, HARTFORD

BENJAMIN WISTAR MORRIS, ARCHITECT



VIEW OF FRONT FACADE

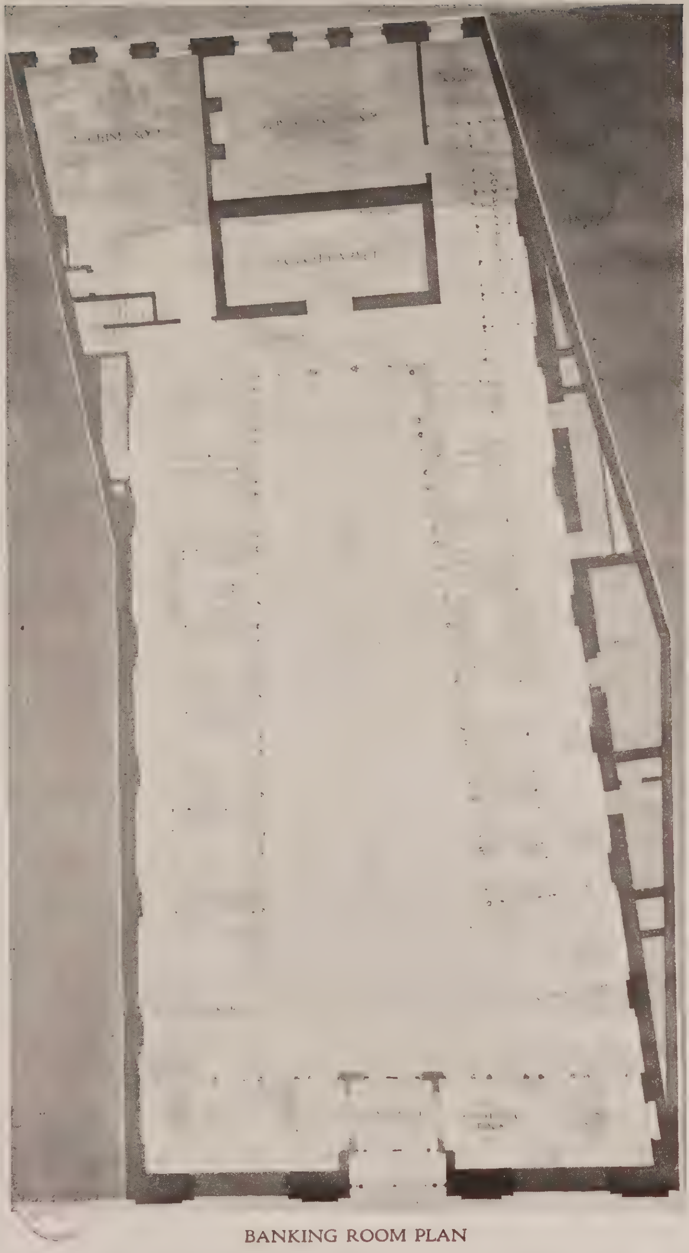


DETAIL OF ENTRANCE

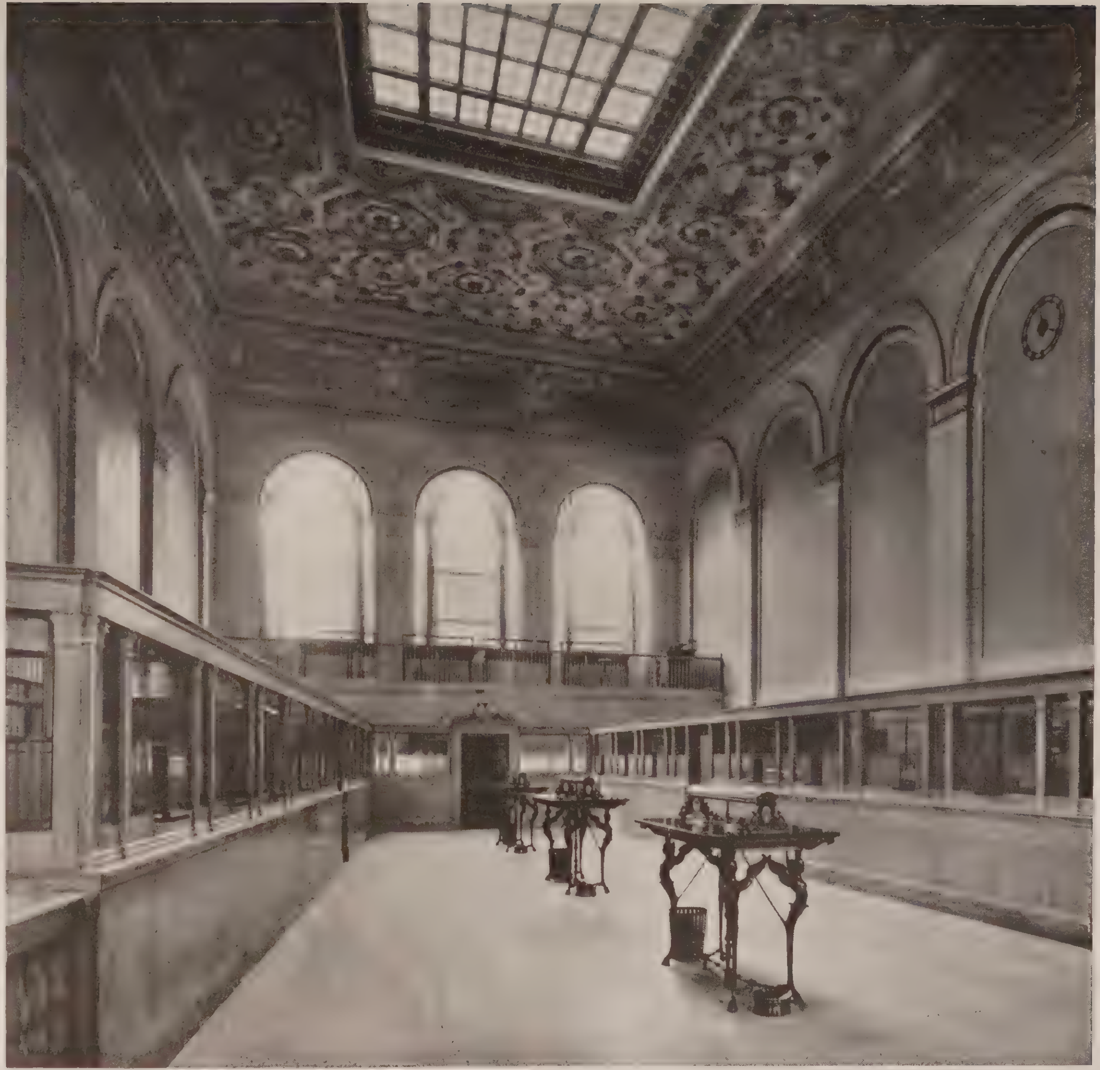
NATIONAL STATE BANK, ELIZABETH, N. J.

DENNISON & HIRONS, ARCHITECTS

Photo by Underwood & Underwood, Inc.



BANKING ROOM PLAN

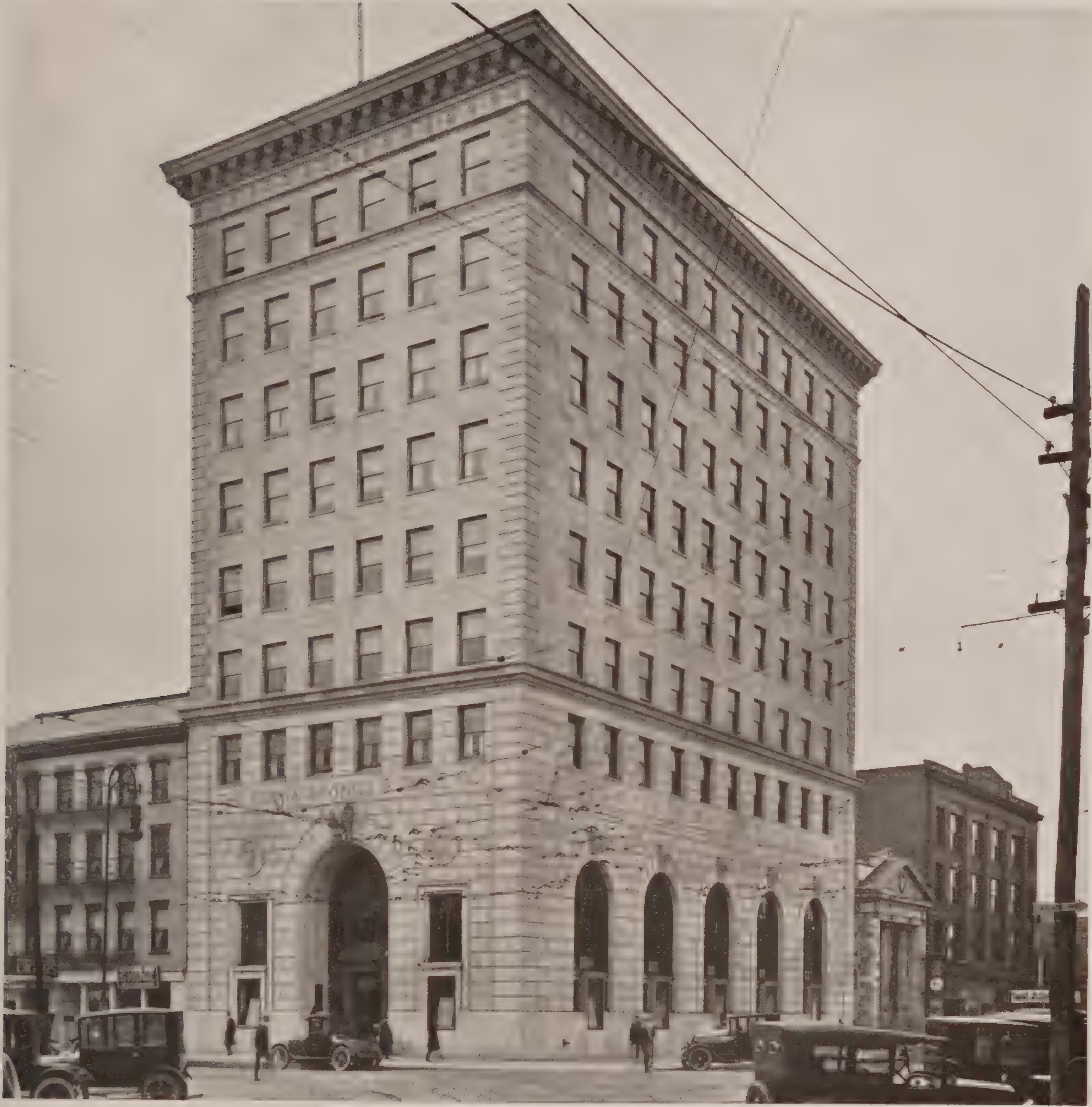


VIEW OF BANKING ROOM

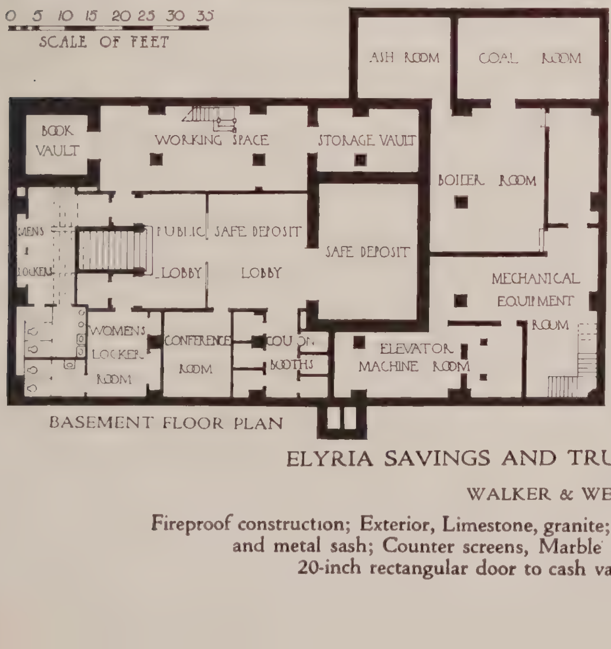
Fireproof construction; Exterior material, Gray marble; Interior material, Imitation travertine; Windows, Steel casements; Counter screens, Marble; Vault and safe deposit provision, Steel-lined safe deposit and security vaults, electric protection; Separate book and trunk vaults; Type of lighting, Indirect; Heating and ventilating, Steam, gravity fresh air ducts; Date of general contract, 1919; Total building cost, Approximately $320,000; Cubic foot cost, 75 cts.

NATIONAL STATE BANK, ELIZABETH, N. J.

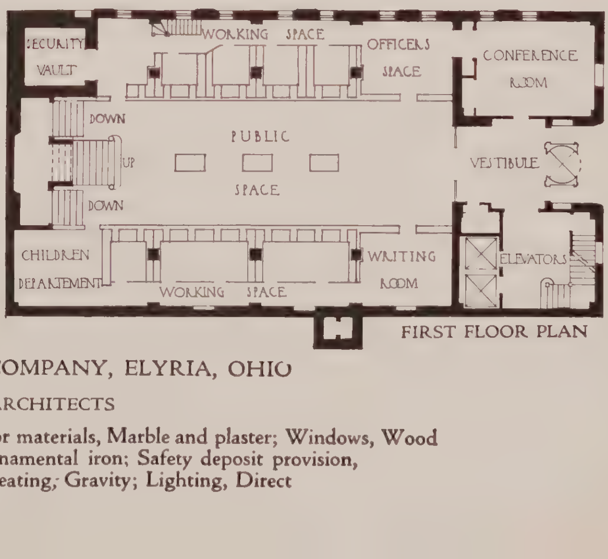
DENNISON & HIRONS, ARCHITECTS



GENERAL EXTERIOR VIEW



BASEMENT FLOOR PLAN

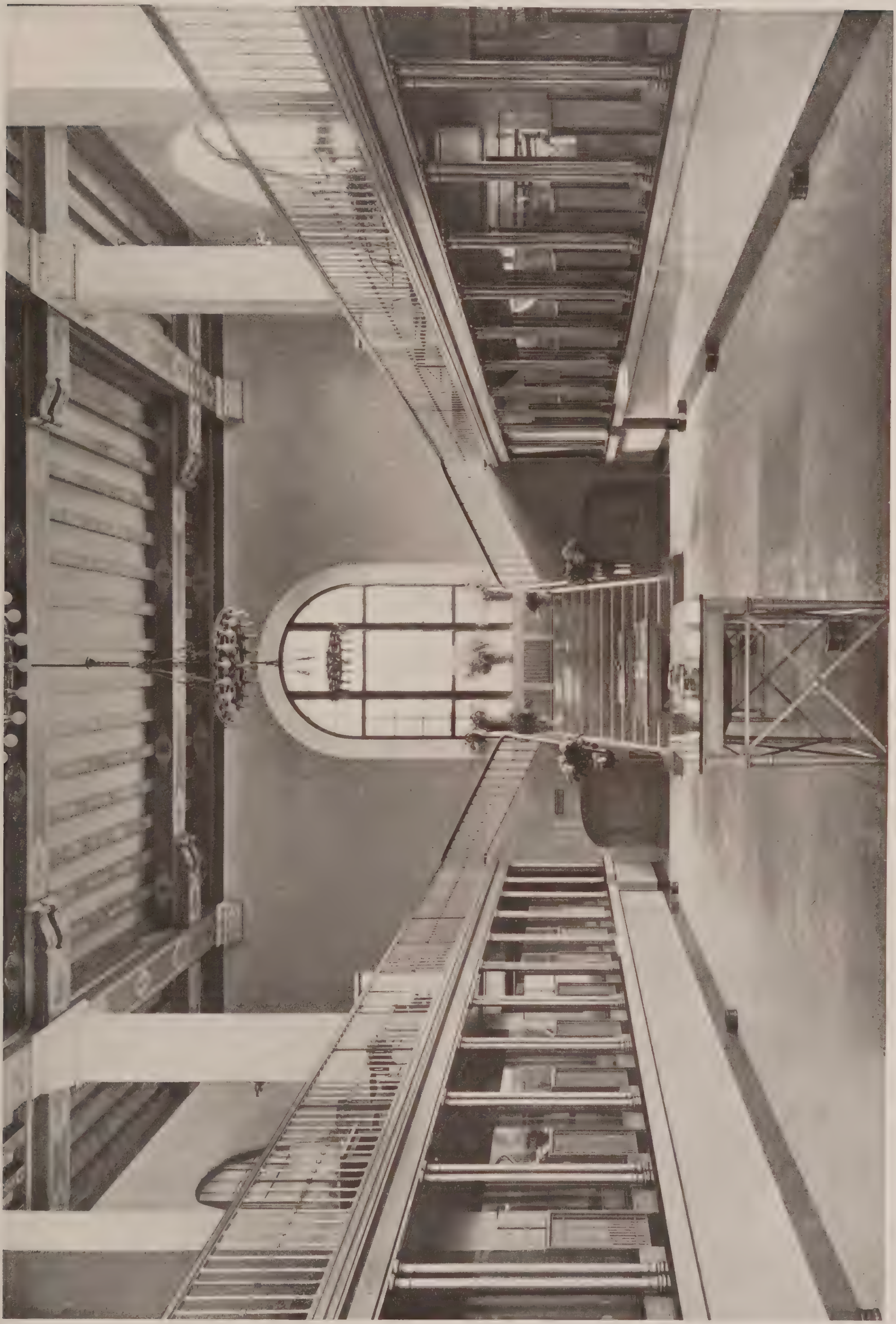


FIRST FLOOR PLAN

ELYRIA SAVINGS AND TRUST COMPANY, ELYRIA, OHIO

WALKER & WEEKS, ARCHITECTS

Fireproof construction; Exterior, Limestone, granite; Interior materials, Marble and plaster; Windows, Wood and metal sash; Counter screens, Marble and ornamental iron; Safety deposit provision, 20-inch rectangular door to cash vault; Heating, Gravity; Lighting, Direct



BANKING ROOM

ELYRIA SAVINGS AND TRUST COMPANY, ELYRIA, OHIO

WALKER & WEEKS, ARCHITECTS

The Layout and Equipment of Banks

SPACE SUBDIVISION AND GENERAL EQUIPMENT FOR BANK ADMINISTRATION

By E. F. ABELL
Abell, Smalley & Myers, Equipment Engineers, New York

IT was the request in preparing this article that it be specific as to standards applicable to the various functions of a bank. It would simplify the operation itself as well as this article were this possible. It is not possible, because each proposition is essentially different as to the kind of business handled, the type of accounts carried, and most of all, the human equation that obtains throughout the particular organization considered. Consequently, this article cannot be another of the well known "How To" series.

There are certain types of buildings which may be considered primarily as machines designed to function for specific purposes. All commercial and investment buildings come generally within the terms of this description, and the space provided in these buildings may be divided into two general classifications which are (1) rentable space, in the equipment of which the owner of the building has perhaps no direct interest, and (2) space provided specifically for the housing of an individual commercial enterprise. Of these enterprises, banks, insurance companies, general offices of manufacturing and public utility corporations are typical.

In the planning of buildings or sections of buildings for such occupancy, the problems are not alone architectural but include the logical arrangement of space for departments and the complete equipment of these departments. Both the space and the equipment must be made ready for the transaction of business in a manner which will provide for the maximum efficiency and the most workable co-ordination of the activities of departments and of individual workers. It is most satisfactory if the equipment engineer can, in co-operation with the architect, make a survey of the administrative requirements for the occupant of the contemplated structure prior to any definite decision as to the building itself. This results in a more economical spacing of columns, stairways, elevators and other means of vertical and horizontal communication. This preliminary planning and approximate allocation of departments is done graphically without going into the details of each piece of furniture equipment. At this time, any arrangement that involves structural conditions can be carried out as the building progresses at the minimum of cost as compared to expensive changes in steel or other construction work. For instance, certain items of furniture equipment may be of such weight that heavier steel in floors is required over what would ordinarily be used for the rest of the areas.

In rented areas contemplated by a bank or corporation it is almost a necessity to make a survey of the organization to fit it to the proposed space and to make this study before negotiations are closed on leases. The preliminary study will show whether the proposed space will properly house the business.

It will be the purpose of this article to consider only the commercial bank in general in order to present information which applies to any problem of bank planning.

In order to determine the amount of space which shall be allotted to each department of the bank, together with the equipment which should be provided for this space, the first step is to provide a basis of study by making a physical and functional survey of the old quarters and present organization of the bank under consideration. This survey will serve to establish, in the form of statistics and sketches, the present administration methods and scope of the bank's business. It will show approximately the relative number of square feet devoted to various departments; it will also show the number of employes within these departments, and establishes at once a basis upon which to plan the new quarters to the greatest advantage.

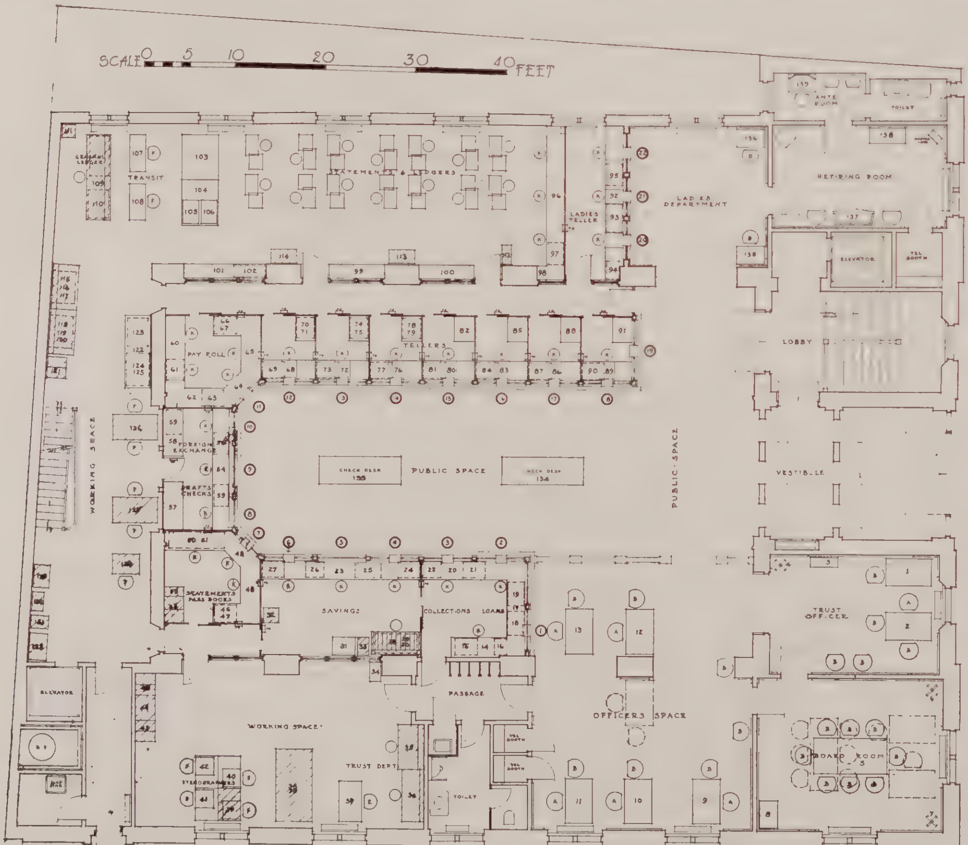
The next step is to perfect in theory the present situation, correcting all obvious defects as based on information from various department heads and employes. After this is done provision is made for the addition of space and equipment to meet future needs and to provide for the growth which naturally results. At this time a point has been reached where the amount of space needed in each department, the number and type of its personnel, and any special requirements of improved business methods and of departmental co-ordination have been determined. With this information the possibilities of the new building as indicated by the number of square feet and general dimensions of its available space can be considered. It may be that the new banking quarters are to consist of a basement, first floor, and second or mezzanine floor. Possibly the building is a combination bank and investment structure, with rentable space and certain space reserved on upper floors for the bookkeeping department. It is obvious, therefore, that this analysis, which determines the layout of banking quarters, should be made in the early stages of planning so that close co-operation with the architect may result in a layout representing the maximum of administration facilities without interfering with the architectural character of the interiors.

Based upon the statistics and data provided by the original survey it will be possible to locate the various departments and sections of the bank which divide themselves into two main classes, *i.e.*, those having contact with the public and those which are strictly working departments, such as accounting and clerical, and which the public rarely sees. It is not possible to set up any standards as to the amount of public space that should be allowed as compared to the amount of working space. Here again the nature of the bank's business is the guiding factor. In considering comparative areas in present and contemplated buildings it is a proved fact that 1,000 square feet of a certain shape will plan out better than 1,200 square feet of another shape, but it is usually difficult to convince the average client of that fact. In determining the relative locations of departments having public access the prior consideration is the comparison of public contact, locating the heaviest traffic as near the street level as possible to facilitate handling the business itself and because of its bearing on elevator traffic. There are no definite standards of sizes for departments, because of the variation of the business done by different banks. Some banks have a large number of small accounts and do a considerable business in small collections, involving more bookkeeping and more teller space than are required in a bank which has a relatively small number of large accounts which may or may not be active. There are, however, certain basic considerations which should be borne in mind when the layout of the bank is planned. For the executives, most bankers still favor a location where all but possibly the highest officers may be within sight of the public, but this is in a sense comparatively recent in practice. Once the officials of a bank secluded themselves in the most inaccessible places, but practically coincident with the idea of publicity and because of natural competition they reversed this procedure for the convenience of the public. In larger banks the routine detailed work is in charge of so-called junior officers, who are delegated to the immediate contact necessary with the respective departments and the public. This leaves the senior officers more freedom to handle the larger problems, and for that reason they can be located in more quiet surroundings. Consequently, in metropolitan areas, especially, the farther they are removed from the street the better for light, air and quiet. More and more is this being recognized.

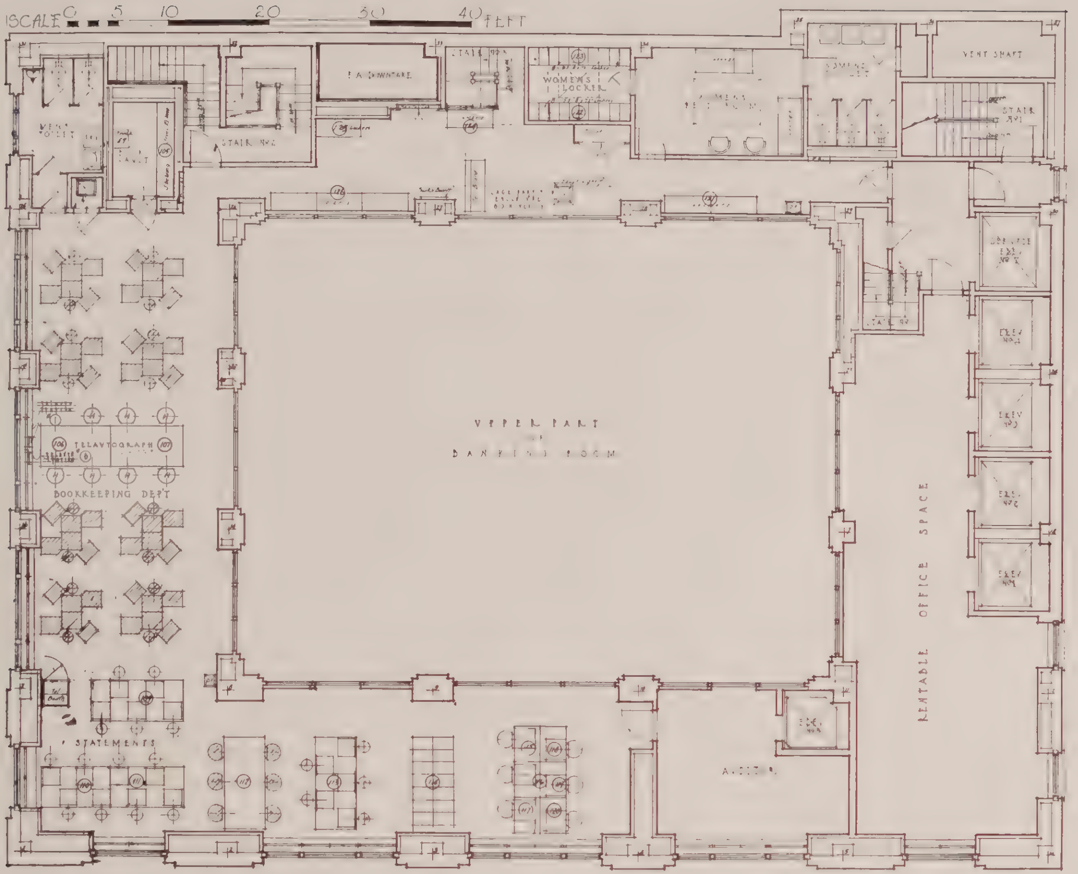
The loan and discount department, because of the nature of business transacted, should be located near an executive, or in direct contact. Even in the largest banks it is usually necessary for loans and discounts to receive the individual consideration of a higher bank official. For this reason easy contact between the two points is highly desirable. The space allotted to the loan and discount department, in common with all other departments, will be determined primarily on a basis of personnel and equipment.

The tellers' division represents a distinct department with practically no inter-relationship during the day except communication with the bookkeeping department, which for the most part is through the medium of telephone or recording devices such as the telautograph or teletype. This communication, which relates to the cash balances of clients and similar information, is of such importance that inter-communication by telephone is not desirable. The telephone permits the distortion of names, initials and figures, and leaves no record at the end of the day if it becomes necessary to trace information and its source. The recording means of communication provide definite records and tend to eliminate errors.

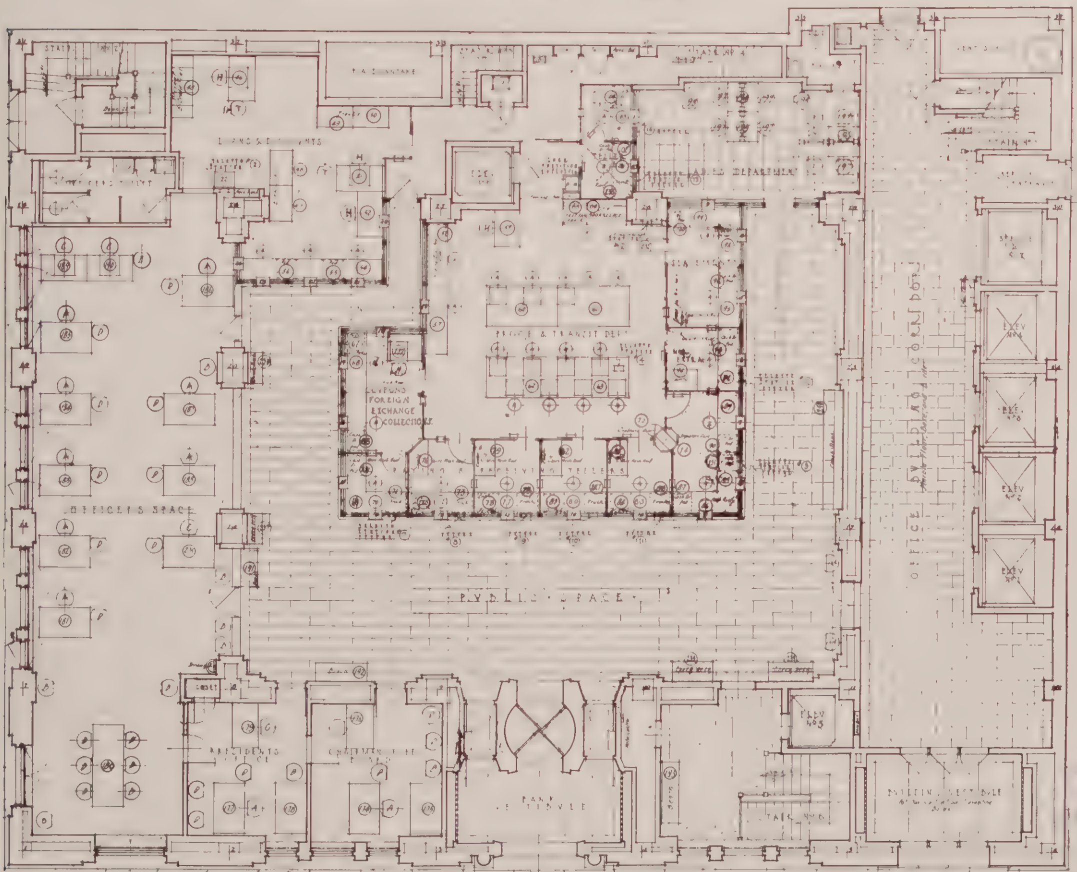
It is of course desirable that the bookkeeping department be located directly behind the tellers' space, but this is not of paramount importance and often is impossible because of space limitations on the first floor. When it is not



Citizens and Manufacturers National Bank, Waterbury, Conn.
All equipment arranged on one floor
Henry Bacon, Architect. Abell, Smalley & Myers, Equipment Engineers



BOOKKEEPING DEPARTMENT ON SECOND FLOOR



HARTFORD-CONNECTICUT TRUST CO., HARTFORD
Complete equipment on two floors
BENJAMIN WISTAR MORRIS, ARCHITECT. ABELL, SMALLEY & MYERS, EQUIPMENT ENGINEERS

possible to place these departments together it makes little difference how far apart they are located. They might be, and sometimes are, in separate buildings. The tellers' space, as a matter of fairness to the individual tellers and protection for the bank, should invariably be divided into individual cages. The practice of placing several tellers within the same cage makes it impossible to fix the individual responsibility in the handling of money and harder to trace errors or differences. The space allotted for the individual teller should be never less than 5 feet square and preferably not much more than 6 feet square. This allows sufficient room for his work, but places every part of the cage within arm's reach so that unnecessary steps and waste of time are eliminated. If a space of less than 5 feet is used it is not possible to provide sufficient drawer space and still keep the free area in front of the wicket, which is desirable.

A question of interest from the public viewpoint is developed in considering the merits of the combined tellers' window (receiving and paying) as opposed to the separate tellers' departments for this purpose. From the viewpoint of the public it is quite obvious that the combination of receiving and paying through the same window is much more satisfactory. In some large banks combination paying and receiving departments include an alphabetical separation of tellers' windows. This means that the client who goes into the bank for a transaction which includes the deposit and withdrawing of money must wait in line if he is unfortunate in finding his lettered window busy, as he cannot take advantage of another which might be entirely free. Yet an analysis of the time consumed for a transaction on a busy day shows that the separated system of tellers will consume from one-half to two-thirds more time on the part of the client than under the combination system where he transacts all his business at one time and with one teller. In addition to this there is the fact that the teller operating under the combination system has a better knowledge of the client and his account, with a fair impression of the size of the balance carried, and in this way it is possible many times to save communication with the bookkeeping department as to the validity of checks.

The bookkeeping department, where the clerical and auditing forces are maintained, is a section which is not open to the public view. It is advisable that this department should be laid out as one large workshop, without subdivisions in the way of partitions except occasionally where it is desirable to segregate the corporate books of the bank. In laying out this department there should be no physical barriers against expansion of its various divisions. There are no particular standards of equipment for the various divisions of the bookkeeping space. Wherever possible stock size files and other equipment are purchased to allow an easy and harmonious development as expansion takes place.

Where it is necessary to subdivide the banking space by the use of partitions the primary requirement is that these shall be thoroughly soundproof. Recent developments in the acoustical treatment of walls and ceilings have been most successful in their application and should receive serious consideration for certain areas, such as stenographic, addressograph and similar spaces where machines are installed. Floor coverings require careful thought and must be resilient and easy to clean.

The size and arrangement of vault and storage space in a bank cannot well be standardized, because here again this depends upon the relative volume of specie, currency, securities and other valuables to be stored and handled through the vault; also upon the relative amount of space to be given over to safe deposit boxes. In order to determine the approximate size of a safe deposit vault, a basis may be arrived at by these figures: 250 safe deposit boxes of the usual varying sizes will require 4 feet in width, 2 feet, 2 inches in depth, and 8 feet in height. Given the required number of boxes it is intended to install, or better, the ultimate capacity of the safe deposit vault, it is a simple matter to determine what the approximate dimensions will be.

To this must be added the necessary capacity for the bank cash and securities, either accessible from the same entrance doors and behind a grille partition or, as in some instances where required by banking regulations, by an additional door. From the economical point of view there is no reason why the same exterior wall should not enclose both safe deposit and bank sections. Endeavor should always be made to locate the bank vault in the basement. The old insistence upon an impressive looking vault door in sight of depositors has been given up. The opinion is that a vault located on the first or banking floor sooner or later becomes a serious obstruction to the expansion of activities, and it is expensive to move.

Illustrations are shown with this article indicating the finished layout and equipment plan for two types of banks, one in which the entire banking quarters are laid out on one floor, and the other where the bookkeeping department is segregated on the second floor. These plans indicate the allocation of departments and their logical contact with the public and each other.

There are, of course, many other details which enter into the consideration of the various problems of layout and equipment. The most interesting, perhaps, is the unconscious absorption of the administration of the particular business being studied. A knowledge of this has an all-important bearing on the completed work as a whole, and it is given to no other branch of engineering to establish the same intimate contact with all the various details of routine and administration.

The beginning and the end of this phase of the work is applied common sense, taking into consideration all possible details of the past experience of the individual bank itself, as well as applying the experience gained with banks of a similar character.

The Architect and the Banker

By ALEXANDER B. TROWBRIDGE

Consulting Architect to the Federal Reserve Board

IT would be illuminating to canvass the leaders of the architectural profession in an effort to find out why some operations are more successful in every way than others out of the same office. The drafting force is the same, the office methods do not change materially, except over long periods, and the specifications follow one another in conformity to well tried out paragraphs and lists. There must be something else to explain why one operation will be fairly free from extras and others pretty well loaded down with additional items which, from the clients' standpoint, ought to have been thought of in the beginning. Why is it that one piece of work will show painstaking care in little things, the craftsman's touch perhaps, throughout the finish, while in another example everything looks as if it had been pushed through a quantity production mill? It is not sufficient to credit the good work to good contractors and the poor work to poor builders. They all have access to the same subcontractors, and we all know that modern building is largely a matter of assembling the subs and planning for their co-ordination.

If the leaders of the profession were asked to answer this question they would undoubtedly say that the excellence of the results is usually to be attributed to the co-operation they have received from their clients. Sometimes they have no co-operation, and not infrequently they have active opposition and adverse criticism. Under such a handicap it is almost impossible to produce good work. Many an owner, and this applies especially to bankers, is too busy to devote adequate time to a consideration of details in plans and specifications prior to the making of working drawings and details. He engages good architects and is disposed to hold them responsible. He believes quite sincerely that he has no fixed ideas, and that whatever his architects recommend will doubtless be satisfactory. It often happens, however, that he wakes up to the realization that he has ideas, but only after the architects have spent many days and many dollars designing and detailing. To require the architects to scrap what they have done and redesign the work to conform to these latent "ideas" of the owner may, at times, be technically proper. There may be no real or intentional violation of the contract between owner and architect, but it is undoubtedly unwise—it may be even called bad business—to so deal with the architect as to make him feel that he has not had fair treatment.

An architect is a peculiar mixture of artist and business man. Sometimes the artist in him is so strong that he cannot do his best work unless he is keyed up by the kindly and sympathetic interest of his client. The architect's drafting room is occupied by other men who are peculiar mixtures. In some cases they are 90 per cent artists and 10 per cent business men. To get good work out of them the members of the firm must exercise tact, must show cordial appreciation of their efforts, and must in every possible way keep alive the enthusiasm of the employe for his work. Perhaps it seldom or never occurs to an owner that intelligent co-operation pays in dollars and cents. Of course it is difficult for the owner who is entering upon a building project for the first time to furnish the kind of co-operation which he might like to offer. In such an instance it is clearly the duty of the architect to point out to the client the way in which he can help, and I'll admit that this isn't as easy as it sounds. Perhaps this little article can be put to a practical use if it helps an architect to present his case to a new, untried client.

Architects' Methods of Payment

In the first place, the prevailing methods of payments to architects are far from satisfactory. This is not in the least degree the fault of clients. The architects are responsible for devising an unwieldy plan which, if applied to all problems alike, results in overcharging, in many cases, for preliminary sketches. Here is the usual schedule of payments: "Upon completion of the preliminary studies, one-fifth of the entire fee; upon completion of specifications and general working drawings (exclusive of details), two-fifths additional; the remainder being due from time to time, in proportion to the amount of service rendered." The lapse between the payment for preliminary studies and that for specifications and working drawings may become painful if the owner is the kind who takes plenty of time in making up his mind. There is no provision for paying for scale and full size details if they should happen to be completed before the building contractor has progressed very far with construction. Why? Because architects have established, as a precedent, the custom of billing their clients in proportion to money paid to the contractor on presentation of the architect's certificate. It would be better from every point of view if the architect could be encouraged to produce details long before the contractor may need them. Thus one element of delay, which occurs in building projects, would be eliminated.

In a recent operation of considerable importance, the fee applying to preliminary studies was paid in monthly installments. When working drawings were started, a plan was adopted of paying the architect what was due him as fast as he completed any particular portion of his work. The general building contract was on the cost-plus-fixed-fee plan, which permitted the architect to keep on with his working plans after the foundations were under way. One-fifth of the estimated full fee was paid in monthly installments during the preparation of preliminary studies. Foundation plans were prepared in the office of a consulting engineer, who was through with his work and ready to take proposals for foundations before the architect had advanced 25 per cent with his general working drawings. At this stage of the performance, the architect was allowed a payment equal to two-fifths of his full percentage fee as applied to foundations, the cost being taken from an itemized budget prepared by the general contractor at the beginning of operations. The steel framing drawings were ready long before the general working plans were completed. The architect was allowed two-fifths of his full percentage fee as applied to structural steel, without waiting for bids. In both cases the architect owed money to engineering specialists which, through this plan, he could pay promptly. It turned out that as the original budget for foundations was short of the final figure of cost, the architect was somewhat underpaid. On the other hand, the budget for structural steel was higher than the final contract price, so in this case the architect was overpaid. Later, when he presented bills for payments due on other important sections of the work, the fees for foundations and steel work were properly adjusted.

The basic reason for the adoption of this plan arose from the knowledge that the old fashioned method of waiting until working plans were finished before reimbursement was due would not be a fair and equitable method, particularly when construction was to be started while working drawings were under way. Some plan providing for payments from time to time had to be devised, and that described seems to have been a step in the right direction. In the plan under discussion, the system was carried far enough to include payments as scale and full size details and specifications were completed for separate sections of the work. One-fifth of the full rate was made applicable to this part of the work. There was thus left only one more fifth to be paid. This, applying more directly to supervision, was therefore logically related to money actually spent on the construction as evidenced by certificates issued to the general contractor. Payment of this remaining one-fifth was the only part of the plan which followed the stereotyped procedure of the profession, which is still in use by many architects. The new system takes care of the architect in case building strikes put a stop to actual construction at a time when, for one reason or another, the owner is anxious to have the architect carry to completion his scale and full size details. This whole plan is particularly advantageous during a period of high prices when work is delayed until a falling market is reached. While this may sound at first reading like a plan designed to safeguard the architect and his organization, it has a subtle value to the owner which may not be at once recognized by the average reader. When an architect of high professional ideals, like the man connected with the operation just described, is in this manner kept supplied with the funds required to run his organization, he responds by supplying the best and most complete detailed drawings which can be made. These drawings are a very real element in the securing of low bids. It is clear that a thoughtful arrangement of progress payments will bring returns in the form of improved service, and that this improved service will result in close estimating on the part of bidders.

Justification for Higher Charges

Sometimes owners are confused and troubled by learning that the American Institute of Architects has issued a schedule of charges to its members with the statement that these charges are fair and proper for certain classes of work, and that the best interests of the profession are conserved if the members do not charge less than these rates. Many otherwise intelligent business men have made the mistake of referring to the Institute as a kind of union because of this schedule. They utterly fail to understand the professional viewpoint. May I attempt, in a few words, to set them right? Experience has shown that good work cannot be done today for the rates which were commonly charged 30 or 40 years ago. As the art of architecture has grown in this country, the drawings required for construction have trebled or quadrupled in number and quality. What was satisfactory as a set of working plans and details prior to 1890 would not today be acceptable in any first class office. Good draftsmen are very much more numerous, and their salaries have greatly increased. At various gatherings of the Institute the members have compared notes, discussing with frankness their costs and their profits, and it was decreed some time ago that the old rate of 5 per cent was too low for decent work and that the members of the Institute should stand together in a plan to secure a better fee in order that the better grade of work, to which the public had become accustomed, could be continued. In no sense is this mandatory. Public opinion in the Institute is strongly against any price competition among architects. If price competition among architects is permitted to gain a foothold, the high artistic standards of the profession are bound to disappear. Competition on quality of work and on service is welcomed by the Institute. The rates established by the Institute are therefore advisory minimum rates, and any man whose work to the public is worth more than the minimum rate is encouraged by the profession to seek higher fees. This is a very different thing from price competition. It is quality competition carried so far as to ask the public to pay an extra price for superior quality. An owner would never make the mistake of saying that one lawyer is about as good as another, or that all doctors ought to charge the same fees. Yet these same owners are frequently disposed to regard architectural service as a commodity, and to bargain for it. The answer to all this is that a man will generally get his money's worth, and if he wishes to engage a cheap architect he will get a cheap result. If he wishes to utilize the skill and experience of a distinguished architect, he ought not to express any surprise at learning that he will have to pay more for that skill and experience.

Contract to Define Specialists' Fields

One very important item which owners and architects alike need to keep in mind is the necessity of a clear understanding as to the terms of the contract. The percentage system of determining fees is still very generally in use, although here and there are found architects who prefer the cost-plus-flat-fee system. If a contract stipulates that the architect shall be paid a percentage of the cost of the finished building, including all built-in material, but excluding all movable furniture and equipment, it may sound clear and simple, but it will still be a subject for further interpretation, and it will probably cause trouble. The best way in the case of a bank problem is to decide what sections of the work would come under the care of an equipment specialist and then to list these items in the contract between architect and owner. This can be done long before the necessity arises of deciding whether an equipment specialist is to be engaged. If he is employed, then the contract clearly defines his duties and all negotiations are simplified. If he is not to be engaged and the owner intends to do a part of this work with no expert help, giving the architect the remainder of the work to do, the list in the contract makes this arrangement simple to carry out. I believe an equipment specialist is a necessity in work of any size or importance. For the sake of harmony, it is best to require that he shall work under the direction of the architect. A great deal of consultation is required between the specialist and the architect, and one of the rather important considerations is to see that the specialist receives his customary fee (usually 10 per cent of the cost of the items installed) and that the architect is reimbursed for his trouble in consultation. Possibly the most satisfactory way is to agree to pay the architect for the actual cost of such conferences, as shown on payroll time cards, plus a proper amount to cover overhead costs. The idea would be to avoid giving profit to both architect and equipment specialist, but to see that the architect is at least reimbursed for his actual costs.

This list has been compiled as a result of experience, and is offered here as a workable basis for determining the scope of the activities of the equipment specialist. His work shall include:

1. All miscellaneous furniture, such as desks, tables, chairs, portable bookcases, files, lockers, etc.
2. Silver, china and all cafeteria equipment, exclusive of what architects call "kitchen equipment."
3. Counter work back of bank screens and in all cages.
4. All cage work (excepting principal counter screen or bank screen).
5. All floor coverings in "working spaces." This refers to spaces occupied by operating clerks, stenographers, bookkeepers, auditors, etc. Public spaces and rooms requiring special design are not included.
6. Lighting fixtures on desks, counters, screens and in cages.
7. Vault equipment.

Architect and Consulting Engineer

The relation between architect and consulting engineer is a subject deserving a chapter all to itself. Some engineers will agree to do their work for a percentage of the cost. Probably all engineers would much prefer a cost-plus-fee method, simply because the percentage plan works greatly to their disadvantage whenever contracts are let during a falling market. If rental of office space and draftsmen's salaries were reduced in proportion to the reduction in contracts brought about by a falling market or by active competition among contractors, the engineer might come out of the experience with a fair profit. But they are not, and there's the rub. I believe emphatically that the percentage system is illogical and ought to be abolished. Why should an engineer or an architect be penalized for devoting himself enthusiastically (?) to the task of reducing his client's costs? Under the percentage system the architect of high ideals, who takes seriously the professional viewpoint that the client's interests shall be the architect's first thought, is punished for maintaining such an attitude. The less scrupulous architect says, "My client has plenty of money—I should worry."

The architect is the logical directing head of any building operation, but the consulting engineer is becoming more and more a necessity in any project of importance. There are many loose ends in the business agreements which are arranged between owner, architect and engineer, and much good could be accomplished if a simple, workable plan could be devised to fit all cases. Because owners do not think alike it appears to be well nigh impossible to devise one form of fee agreement to fit all cases. The difficulty seems to be due to the reluctance on the part of some owners to accept a cost-plus-fee system or a multiple of the drafting cost—say three times the drafting, one-third of the total to represent overhead and one-third profit. The cautious business man sees, or thinks he sees, a chance for the engineer to engage the highest priced draftsmen and to be indifferent if the drafting costs pile up. What was said previously in advocacy of the cost-plus-fee system for architects is particularly applicable here to engineers. If a bank committee could make prompt decisions it could save money in drafting. The trouble is caused by changes with no satisfactory plan for reimbursing the engineer for extra drafting which is brought about through no fault of his. It seems to me that the cost-plus-fee system for engineers is the only workable scheme worth considering. If an owner is afraid the engineer will take advantage of him, then the entire operation is going to suffer, for the owner will suspect his architect, his contractor, his equipment specialist, and finally his associates. Let us consider, however, the case where the owner refuses all methods of reimbursement except the percentage method. The engineer, not wishing to lose the work, finally agrees to accept it for, let us say, 5 per cent of the cost of all items coming under his jurisdiction. He figures he can come out with a fair profit if the prevailing high prices do not drop. If a falling market occurs, he is gone. That's a very brief story, but no more need be said to point out the illogical feature of the system. Any method which makes an engineer or an architect regard, with poorly disguised satisfaction, a set of high figures and to look with dismay upon a set of low estimates is ridiculous and ought not be tolerated by business men.

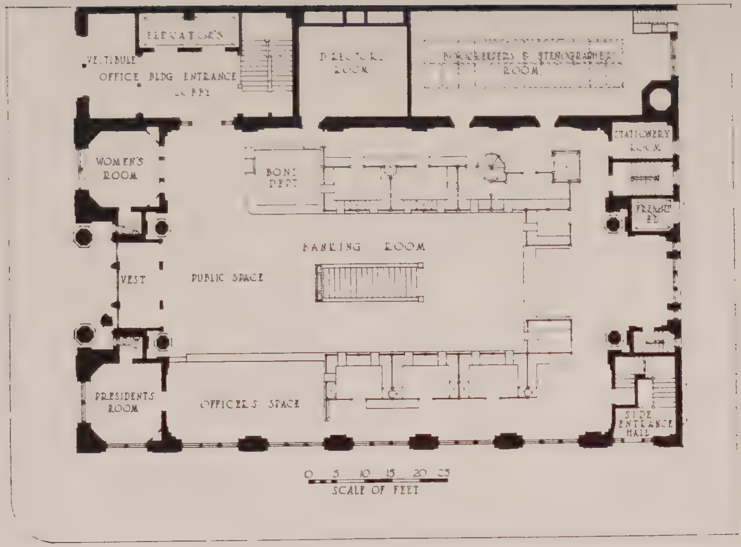
Reference was just made to the advantage to the owner, from every point of view, of prompt decisions and a sportsmanlike determination to stand by them. Backing and filling only make trouble and increase the cost to someone. The important thing to stress is that the owner has a perfect right to take time for his decisions and to change his mind frequently, but he ought to pay for that privilege. The cost-plus-fee system enables him to change his mind and to ask for new drawings and revised specifications without anyone but himself being made to suffer. On the other hand, if he happens to agree with me on the subject of prompt decisions, he will save money, because the work will be prosecuted with the minimum amount of drafting.

Architect and Economic Phase of Building

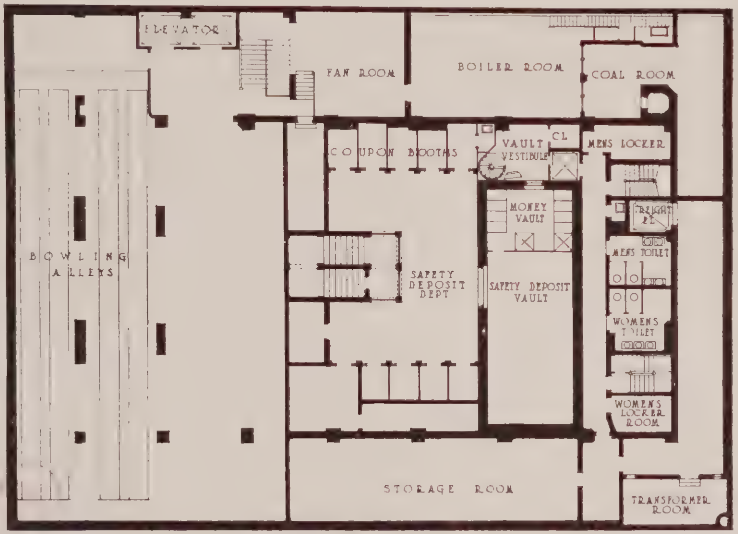
Another weak point in the relations between architect and client lies in the assumption, frequently taken by a client, that the architect need not enter into the economic aspects of a project. It seems to me that this is a fundamentally wrong notion. An architect ought to be engaged before the land is purchased. He should be invited to interest himself in the real estate question as if he were the owner's partner. Furthermore, he should be asked to demonstrate with sketch plans the comparative merits of several available plots. What is the usual procedure? It is to take the advice of a real estate broker, a man whose interest in the subject is primarily to make a sale. He is not equipped to prepare sketches for the purpose of analyzing plots. His knowledge of values, of contracts, of leases and of trade or business migrations is of great importance, but a purchase should not be consummated until the services of an architect have proved whether or not a plot will lay out satisfactorily. Very frequently a venture is unsuccessful because the shape and dimensions of the lot are not suited to an economical distribution of space. Perhaps the proportion of public space, service space, etc., to rentable space is much too large for a good return on the investment. It all too frequently happens that an owner will buy his land first and find out afterward whether he has acted wisely or not. The architect should be instructed in all the economic details of the project. He must know the class of tenants expected for the building, the average rentals paid in the immediate neighborhood, the quality of service supplied for this average rental price, the plan of financing, the plan of amortizing the original expenditure at the end of a term of years, the tax rates on land and building, the probable insurance cost, the estimates for costs of operating, maintenance, repairs, carrying charges, etc., and of course the probable cost of the building. A great deal of this information can be secured without going beyond preliminary sketches. In fact, it would be unwise to proceed with working plans until a statement of net return had been calculated. Whether all this work can be done before purchasing the land, is a question. Whenever such preliminary investigation is possible, it is quite obvious that it would be wise to proceed in that way. If a quick decision on purchase is forced on the owner, then this special study would be valuable after purchase, in order to determine the type and size of building which would make the wisest investment.

In the case of a banking institution which has plenty of money set aside as surplus, upon which to draw for building construction, some of this intensive preliminary study might not be necessary, particularly if the bank prefers to erect a building for its own occupancy with no plan for renting space to the public and no problem of net return on the investment. It very frequently happens, however, that plans are rushed out in a hurry without a careful consideration of the growth of the bank's business and the probable future increase in the size of the banking organization. Ask any architect who has had experience in designing banks, and he will tell you that adequate provision for the future is rarely made, and that vaults are almost always too small.

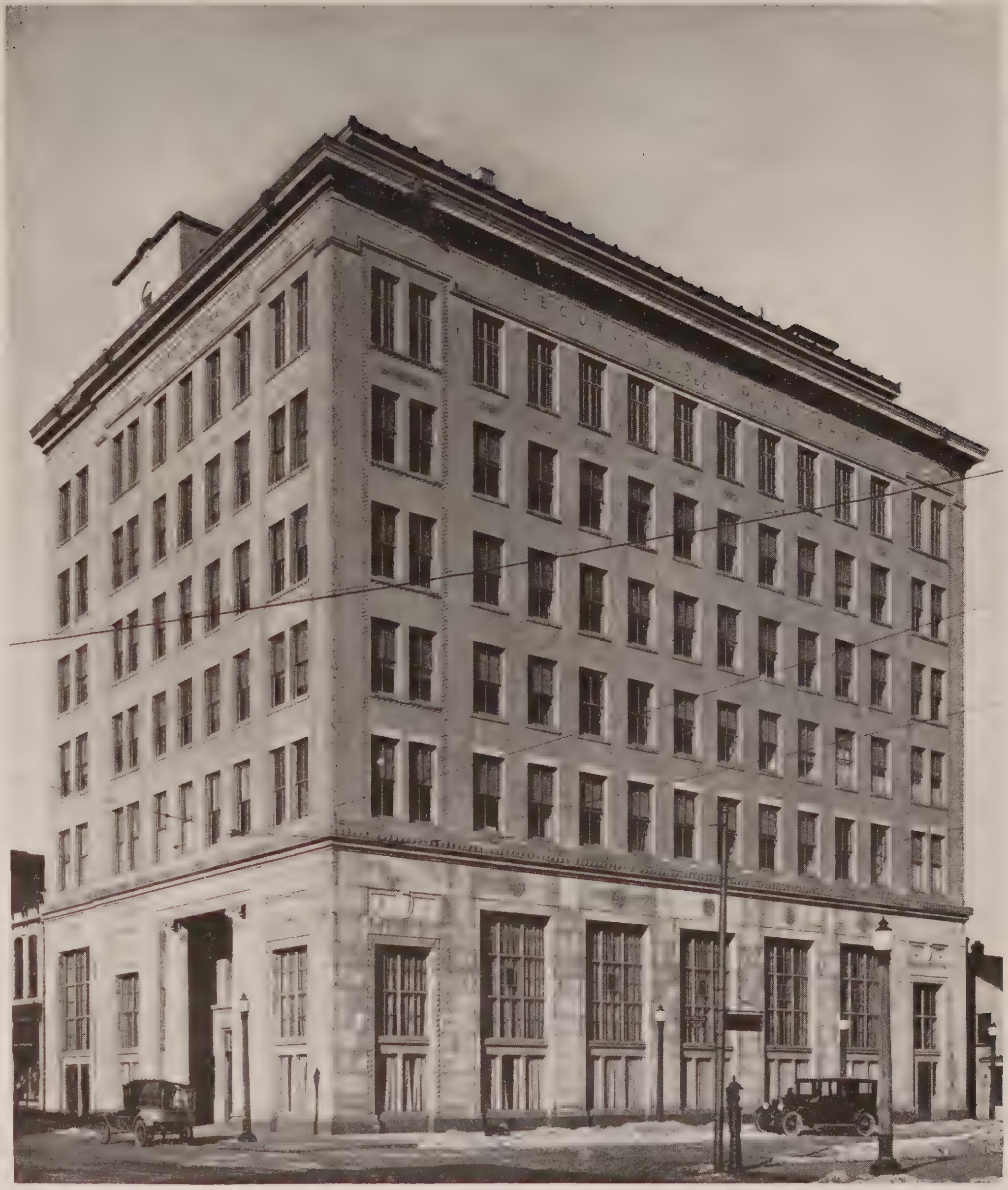
Lack of space prevents a satisfactory reference to the subject of vault construction. In this period of building costs which are almost prohibitory, it is encouraging to know that a new light has been shed on this subject which heretofore has been looked upon as a mystery. It is now possible to construct the walls, roof and floor of a vault at a very substantial reduction from former prices, with first class protection. In this new system of construction the protection per dollar of cost is much greater than with any type of construction of which I know. It is hoped and expected that similar improvements in door construction may be brought about in the near future. This substantial saving in the cost of vault construction will enable many banks to build larger vaults, thereby making satisfactory provision for future growth in that particular department.



FIRST FLOOR PLAN



BASEMENT FLOOR PLAN



GENERAL EXTERIOR VIEW

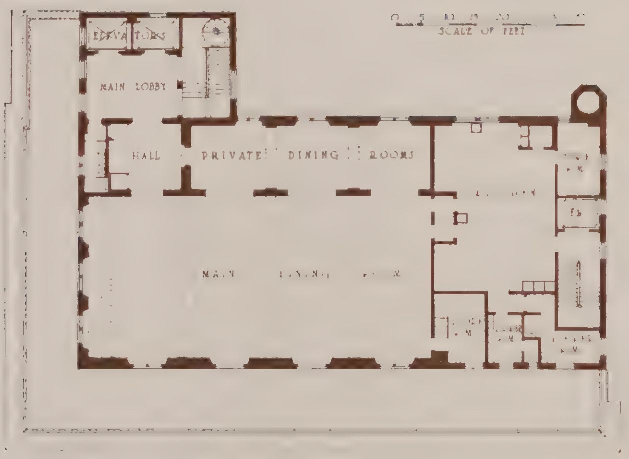
SECURITY NATIONAL BANK, SHEBOYGAN, WIS.

BRUST & PHILIPP, ARCHITECTS

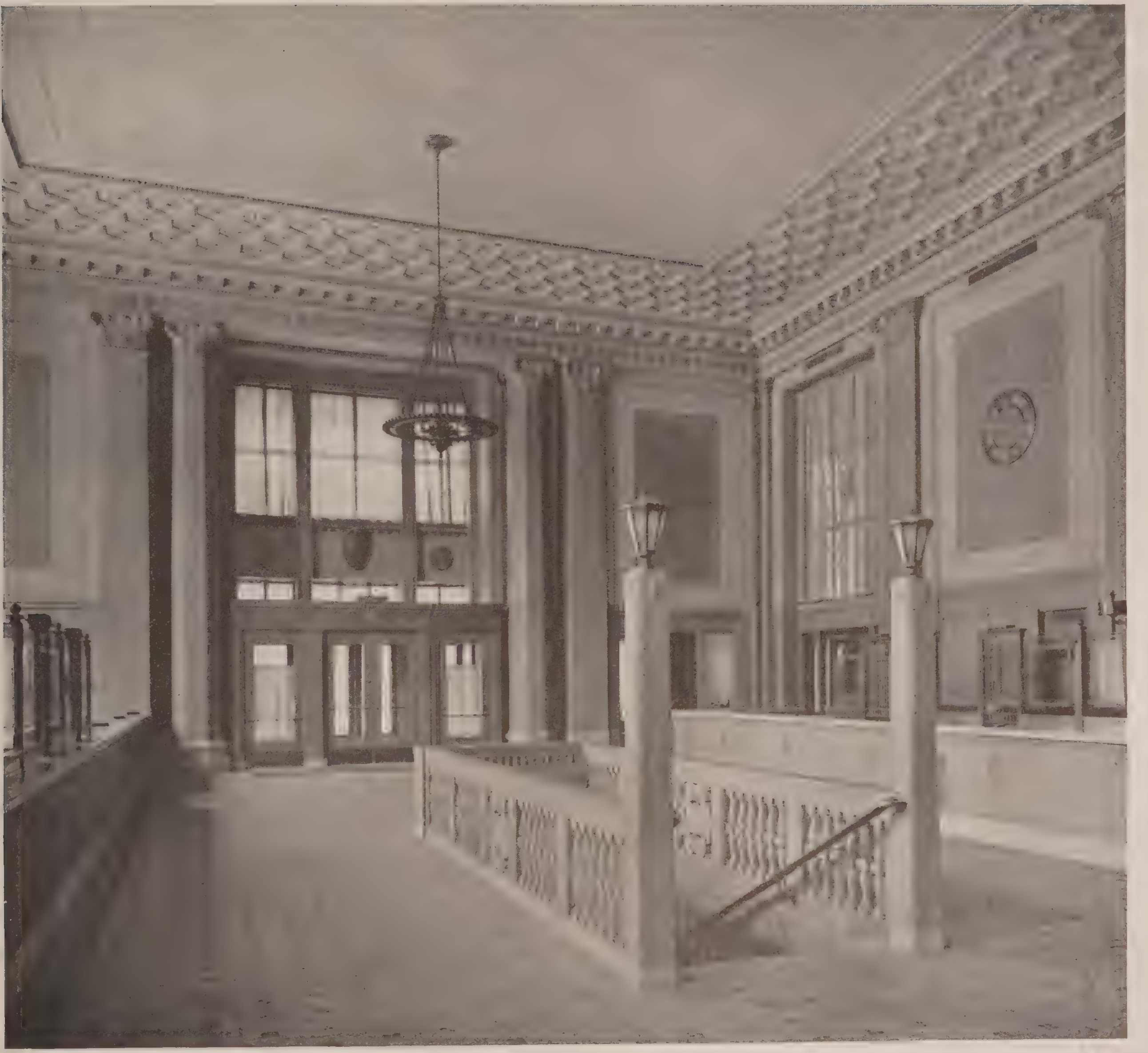
SECURITY NATIONAL BANK
SHEBOYGAN, WIS.

Illustrations on Plates 73 and 74

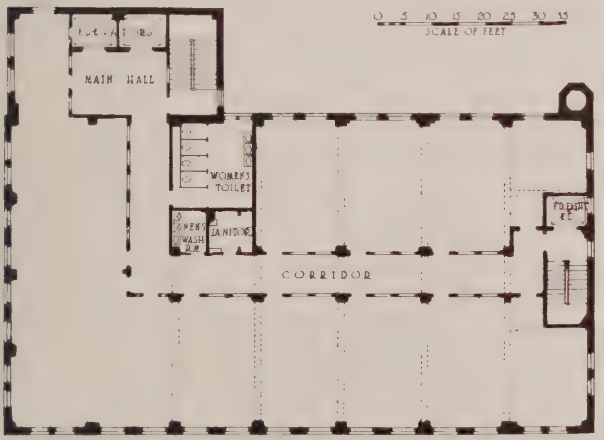
Type of construction. Fireproof
Exterior materials. Stone and brick
Interior materials. Stone, marble and tile
Windows. Metal sash on two sides; wood frames on street fronts
Counter screens. Bronze and bullet-proof glass
Vault and safe deposit provision. In basement; elevator to cash vault
Special departments provided for boards, steamship tickets and savings
Type of lighting. Direct
Heating and ventilating. Low pressure steam; washed air fan ventilation
Date of general contract. July, 1921
Total building cost. $682,000
Cubic foot cost. $65\frac{2}{5}$ cts.



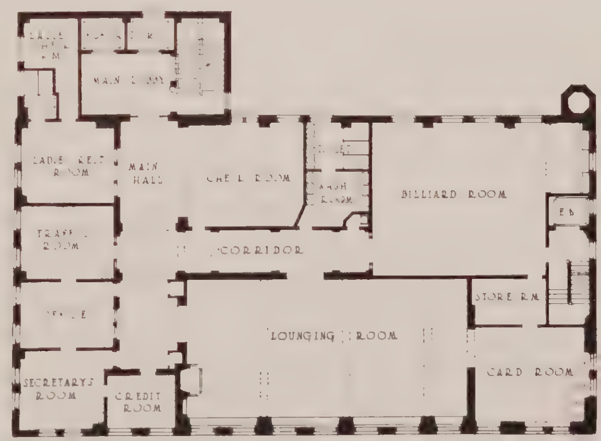
SEVENTH FLOOR PLAN



BANKING ROOM, VIEW TOWARD ENTRANCE



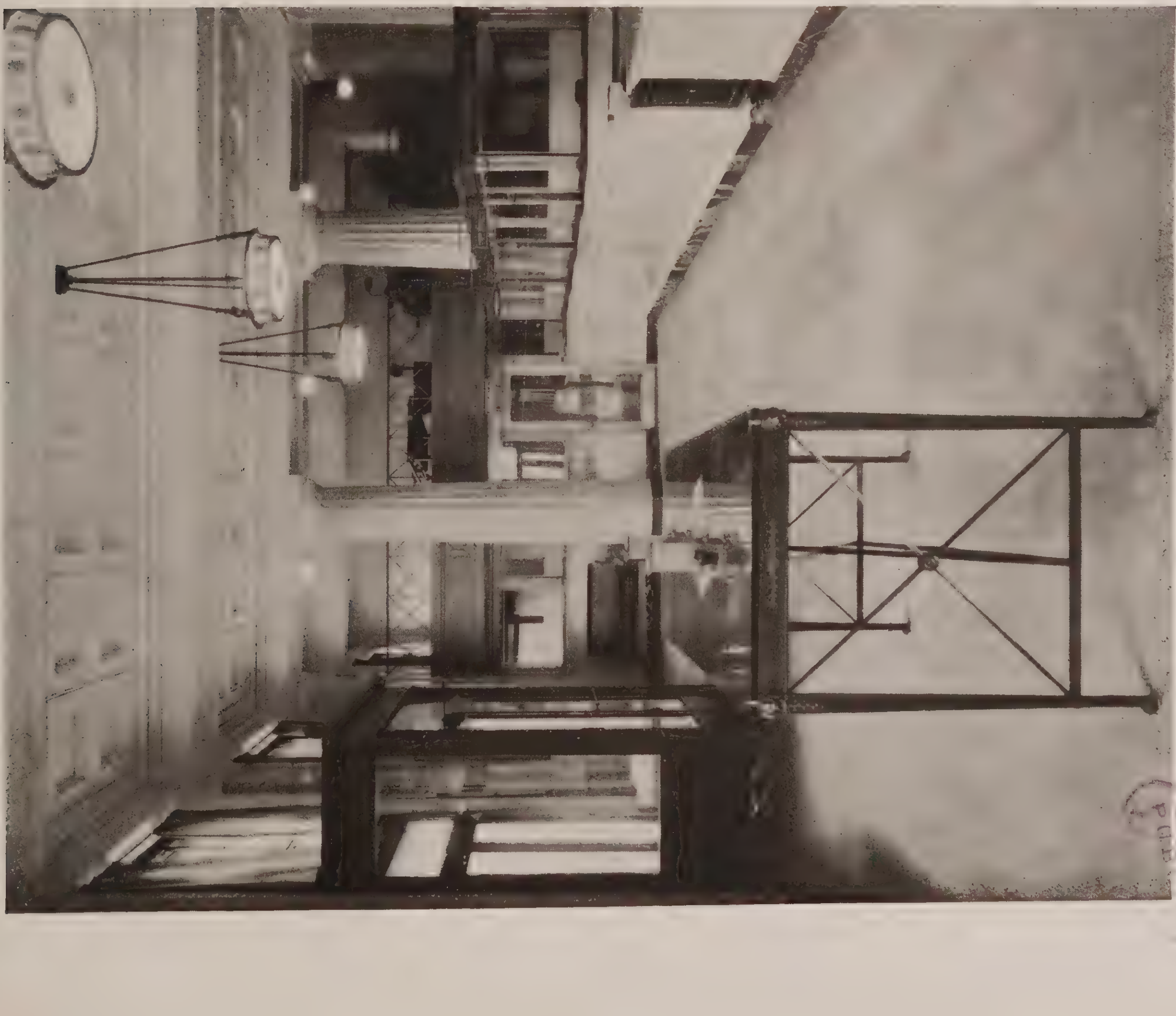
THIRD FLOOR PLAN



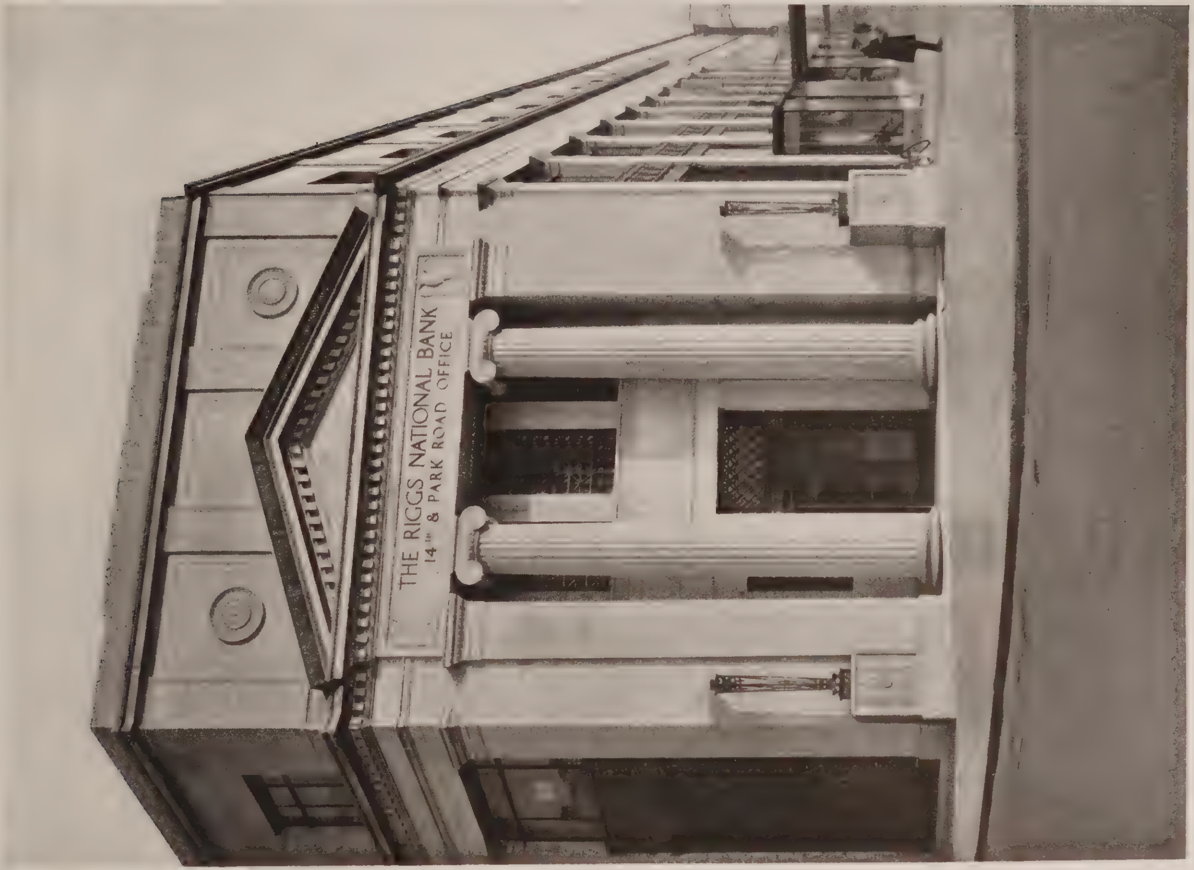
SIXTH FLOOR PLAN

SECURITY NATIONAL BANK, SHEBOYGAN, WIS.

BRUST & PHILIPP, ARCHITECTS



BANKING ROOM



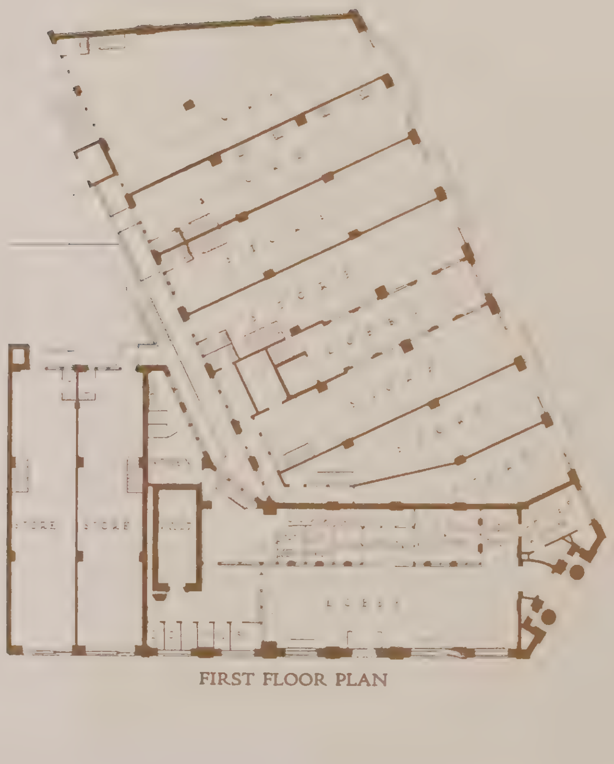
VIEW OF ENTRANCE

14TH & PARK ROAD OFFICE
RIGGS NATIONAL BANK, WASHINGTON
GEORGE N. RAY, ARCHITECT

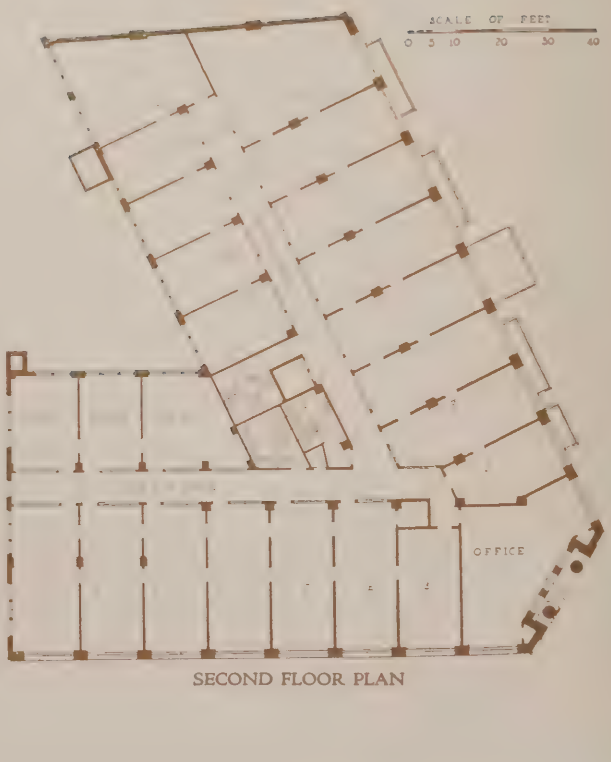
THE RIGGS NATIONAL BANK
14th & PARK ROAD OFFICE
WASHINGTON

Illustration on Plate 75

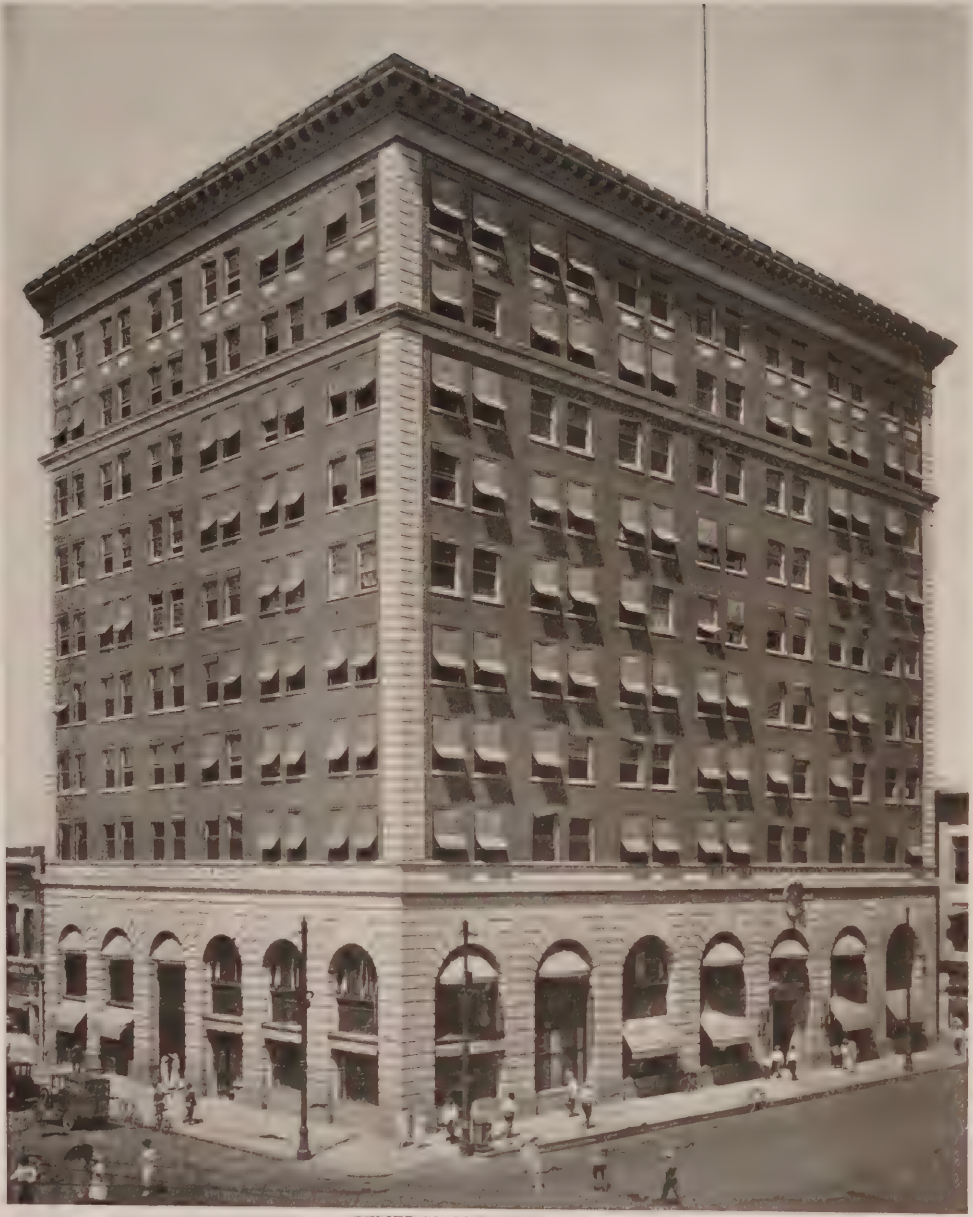
Type of construction. Fireproof
Exterior materials. Limestone and granite
Interior materials. Marble, bronze and scagliola
Windows. Steel casements
Counter screens. Marble and bronze
Vault and safe deposit provision. Cash and safe deposit vaults
Type of lighting. Direct
Heating. Vapor heat



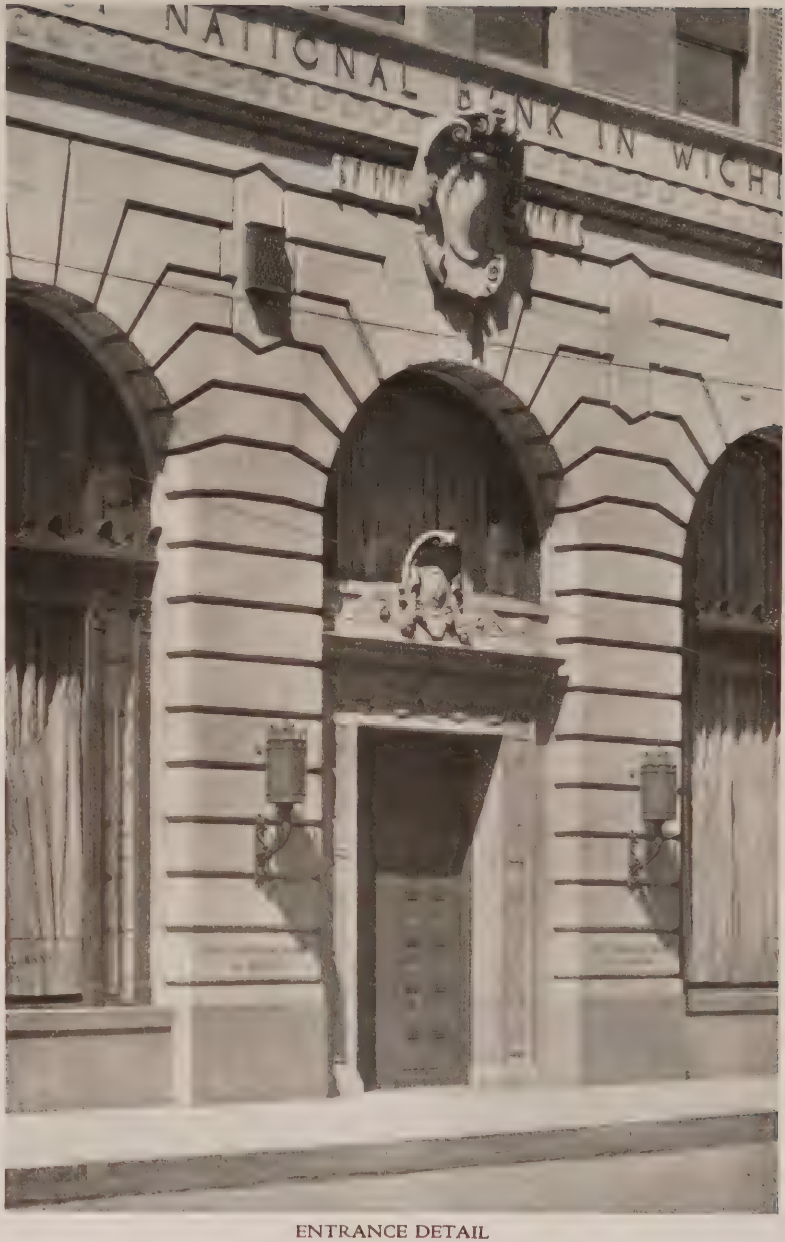
FIRST FLOOR PLAN



SECOND FLOOR PLAN



GENERAL EXTERIOR VIEW



ENTRANCE DETAIL

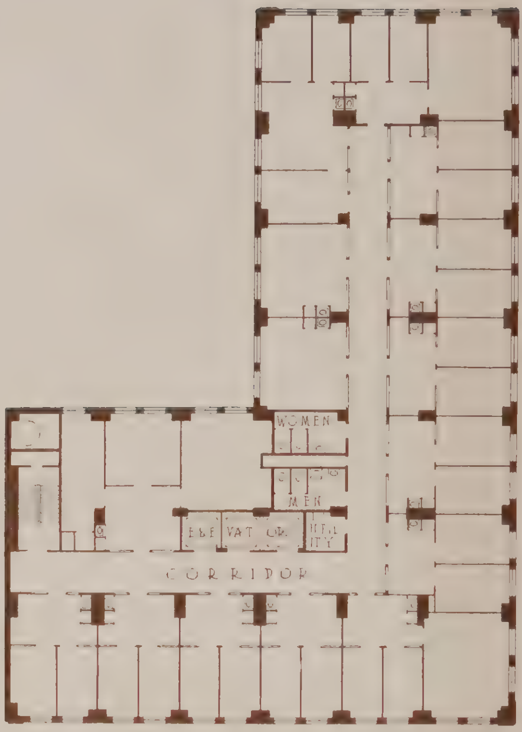
FIRST NATIONAL BANK, WICHITA, KAS.

RICHARDS, McCARTHY & BULFORD, ARCHITECTS

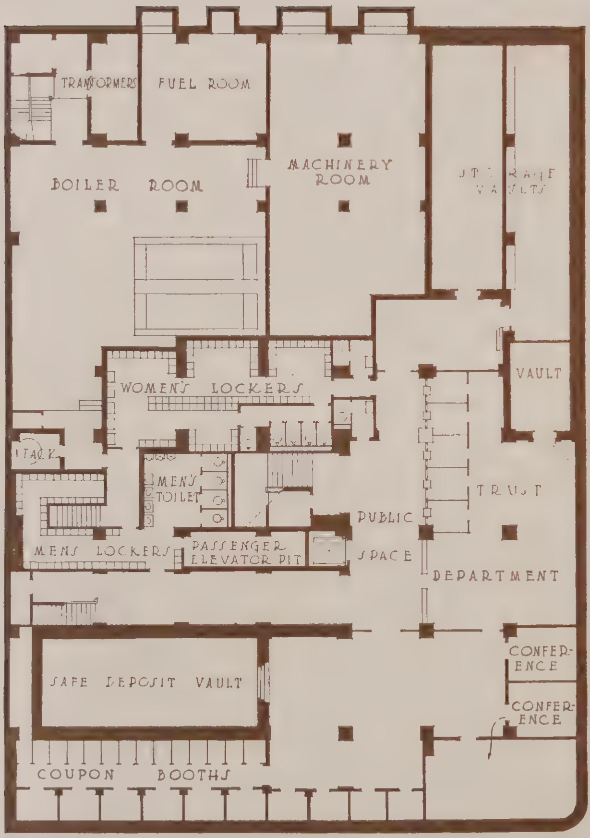
FIRST NATIONAL BANK
WICHITA, KAS.

Illustrations on Plates 76 and 77

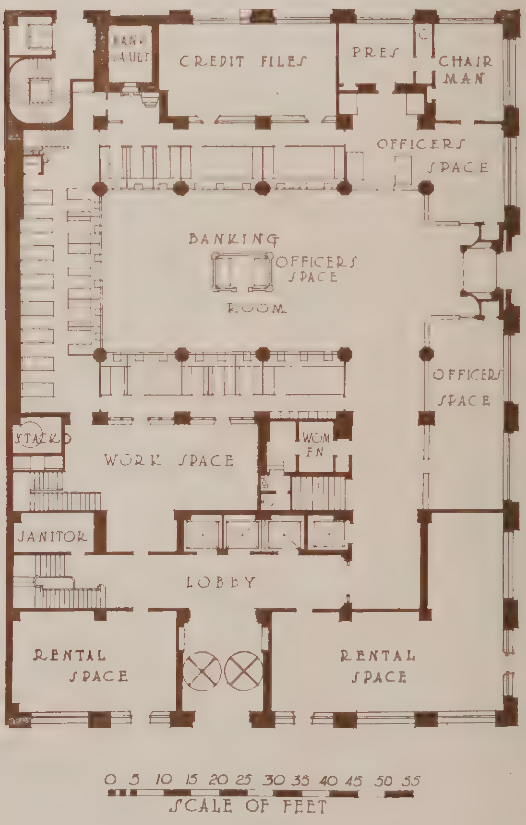
Type of construction. Fireproof
Exterior materials. Granite, limestone, brick and terra cotta
Interior materials. Marble
Windows. Cast iron, bronze finish; wood sash for upper floors
Counter screens. Bronze
Vault and safe deposit provision. Money vault on main floor; safe deposit and storage vaults in basement
Type of lighting. Semi-indirect
Heating and ventilating. Vapor steam; oil fuel; forced ventilation
Date of general contract. May, 1921
Total building cost. $1,482,368
Cubic foot cost. 96 cts.



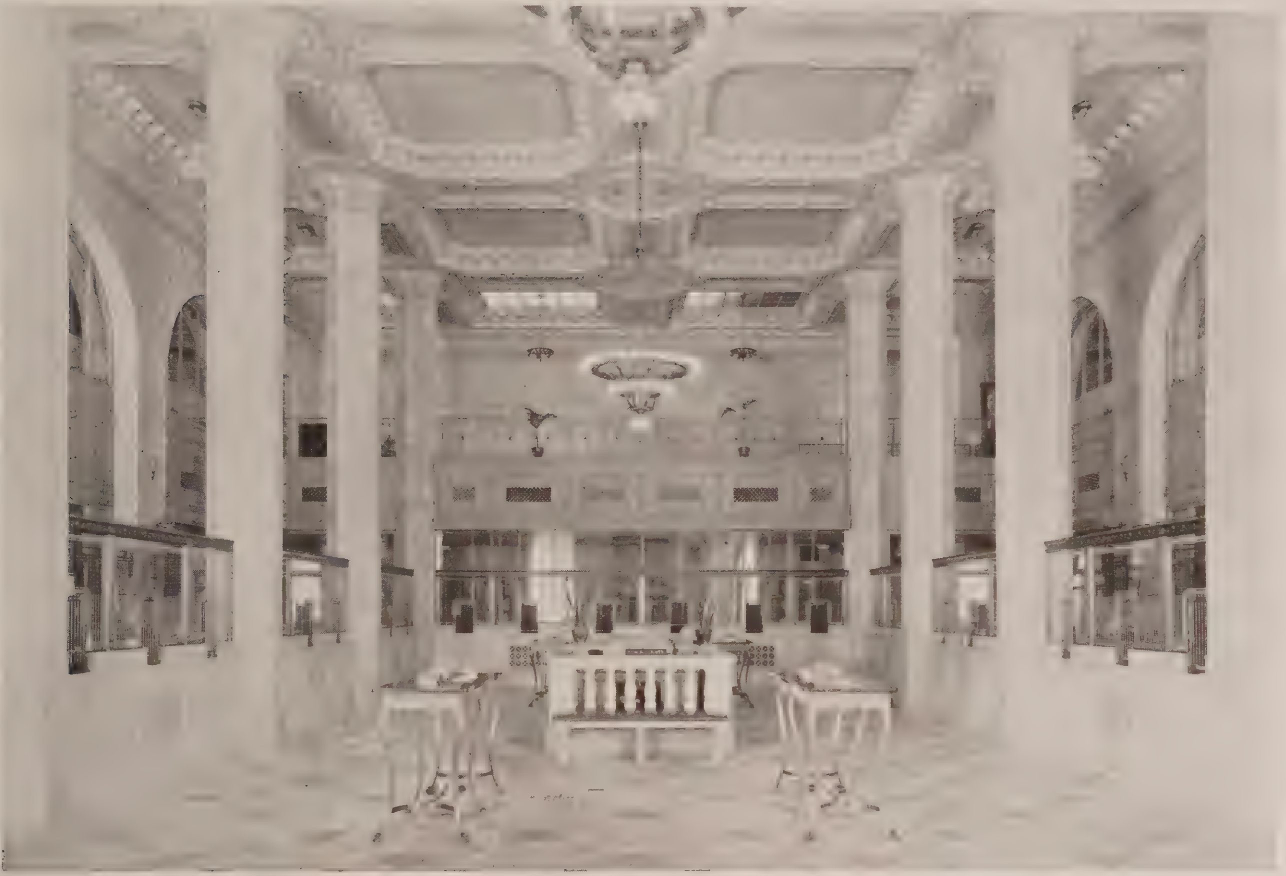
SECOND FLOOR PLAN



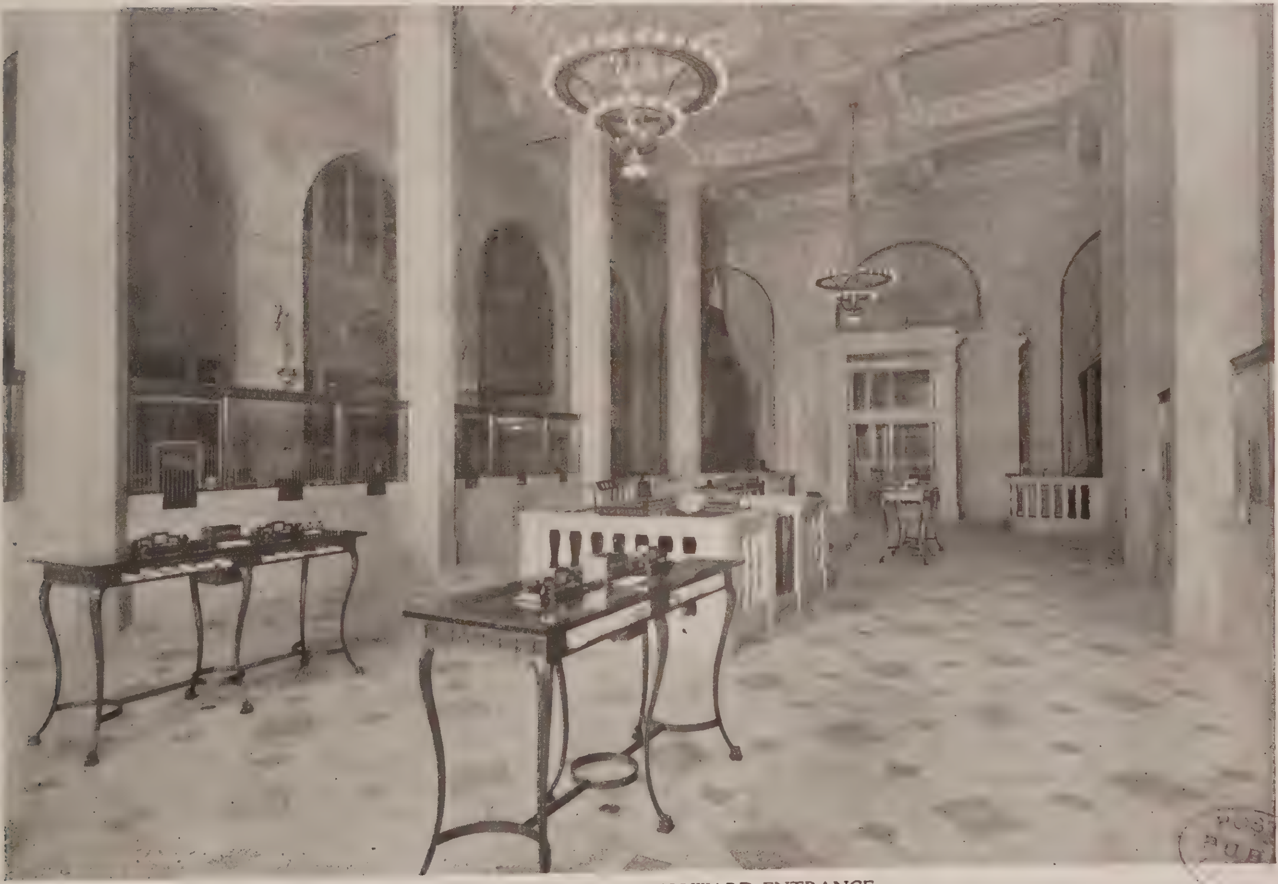
BASEMENT FLOOR PLAN



FIRST FLOOR PLAN



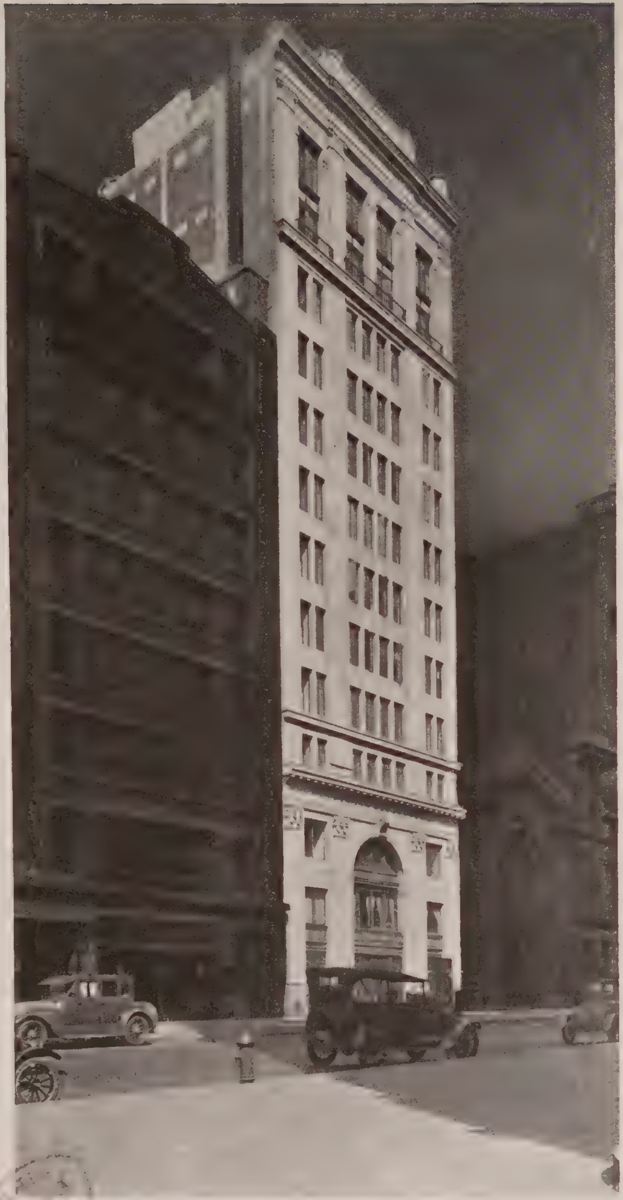
GENERAL VIEW OF BANKING ROOM



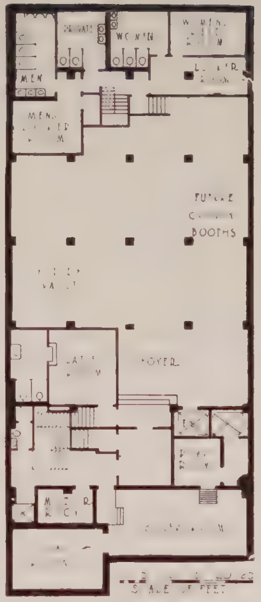
PUBLIC SPACE, LOOKING TOWARD ENTRANCE

FIRST NATIONAL BANK, WICHITA, KAS.

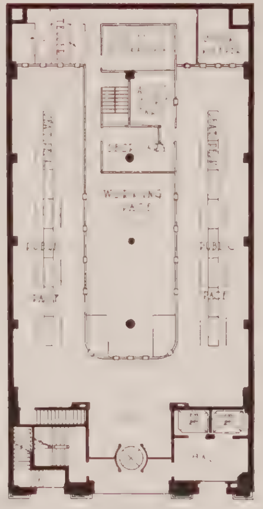
RICHARDS, McCARTHY & BULFORD, ARCHITECTS



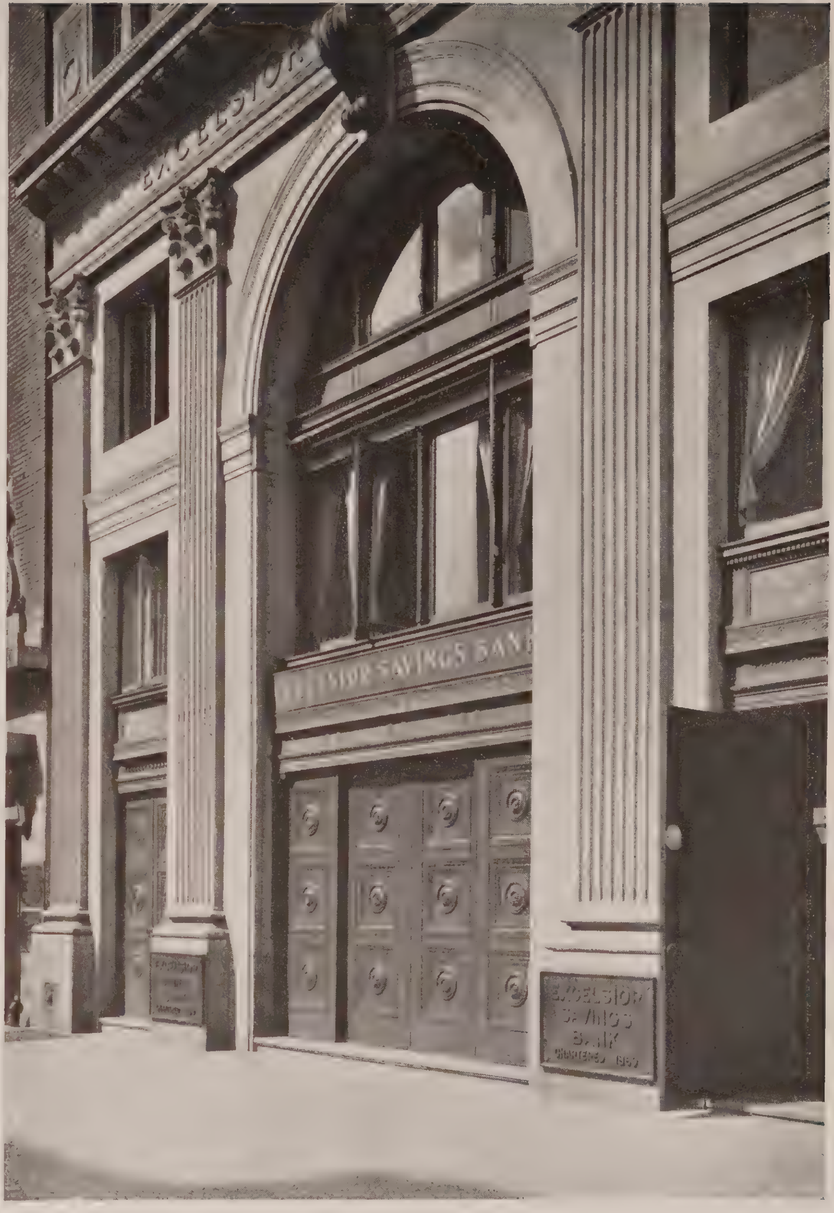
GENERAL EXTERIOR VIEW



BASEMENT



FIRST FLOOR



DETAIL OF ENTRANCE

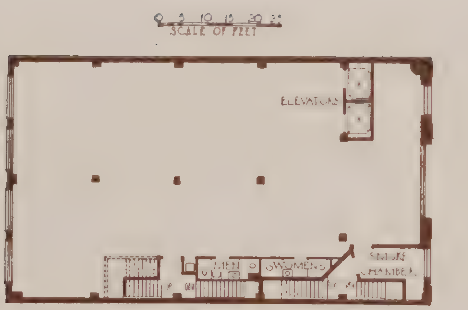
EXCELSIOR SAVINGS BANK, NEW YORK

RANDOLPH H. ALMIROTY, ARCHITECT

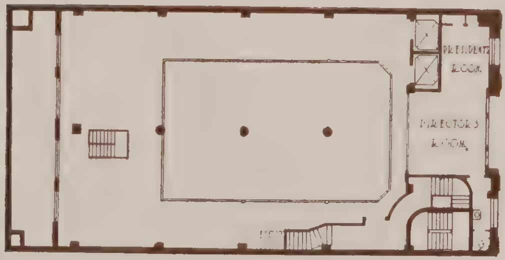
EXCELSIOR SAVINGS BANK
221 WEST 57th STREET, NEW YORK

Illustration on Plate 78

Type of construction. Fireproof
Exterior materials. Limestone with granite base
Interior materials. Imitation stone and marble
Windows. Steel
Counter screens. Bronze, marble and glass
Type of lighting. Direct and indirect
Heating and ventilating. Vacuum system, indirect, for the bank with forced draft suction and exhaust fan
Date of general contract. October, 1921
Total building cost. Approximately $400,000
Cubic foot cost. 55 cts.



SECOND FLOOR PLAN



MEZZANINE FLOOR PLAN

Economic Considerations in Bank Planning

By C. STANLEY TAYLOR

IT is an interesting fact, proved by many instances, that the vision of the skilled bank architect in creating a building to house the business of a bank is more accurate and comprehensive than that of the bank officials and directors. This condition applies not alone to the development of structural efficiency of purpose but to the anticipation of growth or decrease of the bank's business. Significant — almost startling — is the fact that fully 70 per cent of the bank buildings constructed in the United States since 1912 have proved definitely inadequate and inefficient of purpose. This condition may be partially due to the unexpected increase in the volume of banking business in this country, but primarily it is due to past shortsightedness on the part of bank officials who sometimes fail to develop, in relation to their own business, that quality which is recognized and financed in others — business imagination.

Two decades ago American banks were functioning in a limited manner compared with their part in the intricate financial structure which today constitutes the nerve system and center of the business world. At that time new bank buildings involved comparatively simple problems of design and construction. Unfortunately, the vast ramifications and growth of the banking business have not been met by bankers with a concurrent realization of the increased complexity of the modern bank's housing problem. Where this has been done the credit is primarily due to the vision of an architect. Where there has been failure it is usually chargeable to the myopic perspective of the banker,—often against the architect's advice.

Bank or Office Building?

The location of a new bank building is determined primarily by the requirements of its clientele, present and prospective, rather than influenced by investment factors such as land values. The bank must be located in a given business center, which by its very nature usually involves high land valuations. In many instances, therefore, the first problem which must be met is a decision as to whether the building shall be wholly devoted to purposes of the bank's business or planned to carry a varying proportion of rentable space. Is it to be primarily a bank structure or a bank and office building combined? In this decision these different factors are involved:

(a) Land cost and potential increment, which determine value of realty investment.

(b) Practicability of design as influenced by dimensions of the building site.

(c) Market value and demand for rentable space in the selected locality.

(d) Possibility of grouping in the bank building tenants who will constitute or attract desirable clients and depositors for the bank.

(e) Provision of elasticity of space to care for expansion or contraction of the bank's business.

(f) Impression to be made upon the general public by size and character of the building.

It may be expected, as a general rule, that where land values are low —probably under $200 per front foot—the obvious procedure is to construct a building for banking purposes alone. In the congested business areas of larger cities, however, where land values are high, there is involved the economic problem of the relationship of land value and building cost. Here we might arrive at the obvious conclusion that if the land value is high it is necessary to construct a building having sufficient rentable space to assist materially in carrying overhead cost and ultimately amortizing the added investment necessary to meet this economic demand of high land costs. A more careful consideration of this question demonstrates the peculiar individuality of each bank building project and the importance of other factors indicated herewith.

As this article is being written two large bank structures are being erected in the central business district of New York where land values are unusually high. One of these buildings contains approximately ten stories of rentable commercial space, while the other is being erected without any rentable space. The reason for this difference involves primarily the practicability of lot sizes. One of the buildings is being constructed on a lot of ample size and dimensions to allow the proper type of banking rooms, together with the necessary public approach and elevators for the office building section of this structure. In considering the plans for the other building, it was found that the lot was of such dimensions that the necessary allowance of from 16 to 20 feet in width for the public entrance hall and public elevators would so limit the size of the main banking rooms as to detract from their purpose and efficiency. It was decided, therefore, that in spite of high land cost, it was necessary to adhere strictly to the original purpose of the building as a bank, particularly when it was found on careful investigation that the value of rentable space which might be provided was not great enough to justify interference with the requirements of the bank. This brings out the important fact that the original purpose of the building as a permanent home for a bank should never be forgotten, and that its requirements should come before all others.

It is fairly obvious (but not always practiced) that before making the final decision to invest in a large building containing rentable space a careful appraisal should be made by experts as to the existing rental value and the demand for the space which is to be offered in a particular locality. A study should also be made by these experts in building management covering maintenance costs and other factors entering into an investment of this nature. It is highly desirable, but again not always done, that such an investment be placed on a paying basis. Some bankers have found it wise to require only that this added space shall pay a fair proportion of the overhead charge. In cases of this type it is assumed that the prestige benefit of a larger building and the collective tenancy advantages will offset or pay interest on the investment.

Providing for a Bank's Enlargement

A valuable consideration is that the provision of rentable floors above the banking room allows one to provide for the future expansion requirements of the bank's own business. This is one practical solution of the problem of elasticity (which is discussed in detail in later paragraphs) and provides a means by which additional space for future requirements will carry its own overhead cost until such time as the growth of the bank's business may warrant the taking over of additional space.

In the planning of a building of this type it is highly important that careful consideration be given to the arrangement of elevators and service features so that additional portions of the building may be taken over for use by the bank without alterations or inconvenience in interior arrangement. Here we may define a basic rule which should apply to every new bank building, and incidentally call attention to the fact that this rule is transgressed more often in the development of new banking quarters than any other principle of bank planning. The history of bank buildings has proved that under the changed economic conditions of the last few years bankers have been too conservative in estimating or admitting the possibility of growth in their own business. We realize that the next few years may not show the amazing growth and expansion of the banking business which characterized the war and post-war periods. In fact, some of the larger banks are finding it possible to reduce space requirements by increased efficiency. The normal growth of the banking business in America averages 6 per cent annually. Aggressive institutions, operating on well defined policies of expansion, will enjoy a larger proportion of this average increase. The advice here given on elasticity of plan principally anticipates growth, but it must be remembered that the elastic plan will make it easy to turn waste area into paying space if the bank's space requirements decrease. It is advisable, therefore, that in planning the new bank all floors and communications should be laid out so that departments may be extended, shifted or curtailed. Elevators should be arranged so that they may ultimately serve either the public or the bank's private uses.

The natural attitude of the average banker is that with the knowledge he has of his own business he is quite capable of indicating the interior layout and the inter-relationship of all departments. A seemingly paradoxical statement, but one which is borne out by examination, is that the skilled bank architect knows more about laying out the bank than does the banker himself. The reason for this is simple and logical. The banker is too close to his own business to have profited by the mistakes of others or to have examined extensively the successful factors which have contributed to sound planning of other institutions. Planning is the architect's business, just as financing is the banker's business. Industry and commerce seek the banker's advice and follow his counsel in the solution of financial problems. Similarly, the wise banker will seek and follow the advice of experienced bank architects in the development of buildings.

Bankers generally have realized the value of a bank building so designed that it will impress upon the public mind a sense of stability and safe guardianship of the money and business interests of clients and depositors. This point needs little stressing as it has been the experience of practically every bank that, following the construction of impressive banking quarters, a definite growth in business has resulted. There are one or two points which may be made in this connection, however. In the small town or city it is quite possible to lay too much emphasis on impression value and to build a type of building which is entirely out of scale with the town. It is an excellent idea to anticipate the growth of any community by setting the pace with the proper type of bank building, in fact in some instances a definite portion of industrial and community growth may be traced to the farsightedness of bankers not only in their attitude toward the financing of new local ventures but in the demonstration of faith in the future of a community as expressed through the design of banking quarters. One point in regard to impression value may be noted in connection with buildings which are to contain large areas of rentable space as well as banking quarters. It is important that in the design of this building the importance of the banking quarters be strongly emphasized, so that the bank will not have merely the appearance of a tenant in a rented portion of the building. This cannot be gained through the name of the building alone but must be definitely expressed in its design.

In closing, we wish again to stress the important factor of elasticity. Hundreds of banks within the last few years have found it necessary to purchase additional land, at three or four times the cost of a few years previous, or to extend through alterations into adjoining buildings to meet an overcrowded and inefficient condition in their business quarters because of a lack of foresight at the time of building new quarters only a few years before. Many instances of inconvenience, expense and business curtailment might be cited because of disregard of some of the points brought out here. It is to be hoped that bankers will learn within the near future to approach the problem of erecting new buildings from an open minded and comprehensive viewpoint.

The Design of Bank Screens and Furniture

By CHARLES A. HOLMES, *of Holmes & Winslow, Architects, New York*

BANKING screens of the present day are almost always of much simpler design than of a few years ago. Ten or 15 years earlier even the best architects seemed to think that more bronze in a screen increased its beauty. Perhaps one reason for designing the cumbersome looking screens of that period was to carry the idea of substantial protection for the bank's cash behind the screen. At that time also it was the custom, in almost general use, to have the entire space between the counter and the cornice filled with a bronze grille. Screens of that period more resembled those of a jail than those in an inviting place for the public. Then, too, it seemed the vogue to place lights along the tops of the screens which perhaps did add something to the general lighting of the rooms, but these lights did not add particularly to the light thrown upon the face of the man in the public space so as to be readily seen by the teller, which is more the aim of the present-day lighting schemes.

The designer is restricted somewhat by the fact that the spacing of the pilasters in every case is somewhat a settled question, owing to the length of the practical cage. The height of a banking screen should be, in the writer's judgment, not under 7 feet, 3 inches nor over 7 feet, 6 inches—not under 7 feet, 3 inches because of the fact that almost every screen has one or more doors, and it will be found that with a well proportioned cornice it will just about allow for a proper door height; and not over 7 feet, 6 inches for the reason that this height answers every utilitarian purpose and still is the proper proportionate height for any banking room.

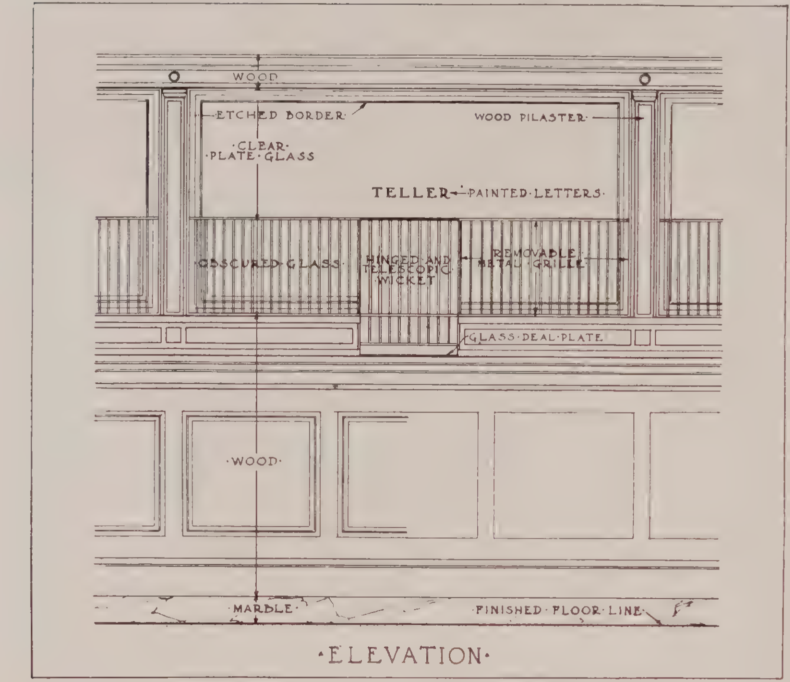
There are illustrated here several general types of banking screens, and all of them are of types either susceptible of simplification or further enrichment. They are all practical, and are screens that have been built and are giving service in present-day banks. The reader will note that every screen has a ledge on the public space side. This is very essential and has another reason for existence than use as an elbow resting place, namely a space to write upon while standing in line to be waited upon by the teller. In most instances it is made 5 or 6 inches wide, but in some savings institutions it is made 8 or 9 inches in width, although 7 or 8 inches is amply sufficient. A wood screen needs no masonry backing. Masonry, which may be of brick or preferably hollow tile 3 or 4 inches in thickness, is required, however, for marble or marble and bronze screens, and extends only to the ledge height.

A wood screen (unless it be of the very cheapest variety) should have ½- to ¾-inch iron rods securely fastened to the floor and extending through the pilasters (one to each pilaster) up to the cornice and there be arranged with nuts which when tightened up give strength and rigidity to the screen. A similar rod is also practical for a marble and bronze screen, but is not applicable to the all-marble screen. This demands something stronger, and a light 2- or 3-inch steel channel frame is necessary. This would have a channel member in the cornice and be connected with the channel in each pilaster. The marble cornice is then connected to and stiffened by this upper channel. In the case of the all-marble screen or the marble and bronze screen the iron rods or channel frames should be encased by the masonry backing.

The lower member of the base of a wood screen should be of marble or similar material so as not to show evidence of mopping. Wicket openings are made either "high" or "low." When "high" they are simply made hinged and arranged with a proper locking device. Some banks prefer the wickets "high," or 5 or 6 inches above the counter, while just as many other banks have a preference for the "low" wickets, that is where the glass deal plates are sunk into the counter, in which event they should continue from within a half-inch or so of the front edge of the ledge and extend back to the rear edge of the working counter. Half-inch plate glass with green or black felt underneath it is a practical arrangement, although some bankers prefer a black hone finish glass which affords relief for the teller's eyes. When "low" wickets are used they may be made telescopic and hinged or simply hinged. They should be arranged, however, so that a good-sized bag of coins could be taken through readily.

The practical width of a wicket we have found to be about 14 inches, excepting the wicket for new accounts in a savings bank, which must necessarily be much wider, varying in width anywhere from 2 feet to 4 or 5 feet, depending upon the size and character of the bank. The top of no wicket should be so low as to require the customer to stoop perceptibly to talk to the teller, and it is just as important that there be no unnecessary obstructions which would prevent the teller's having a good view of the depositor's face.

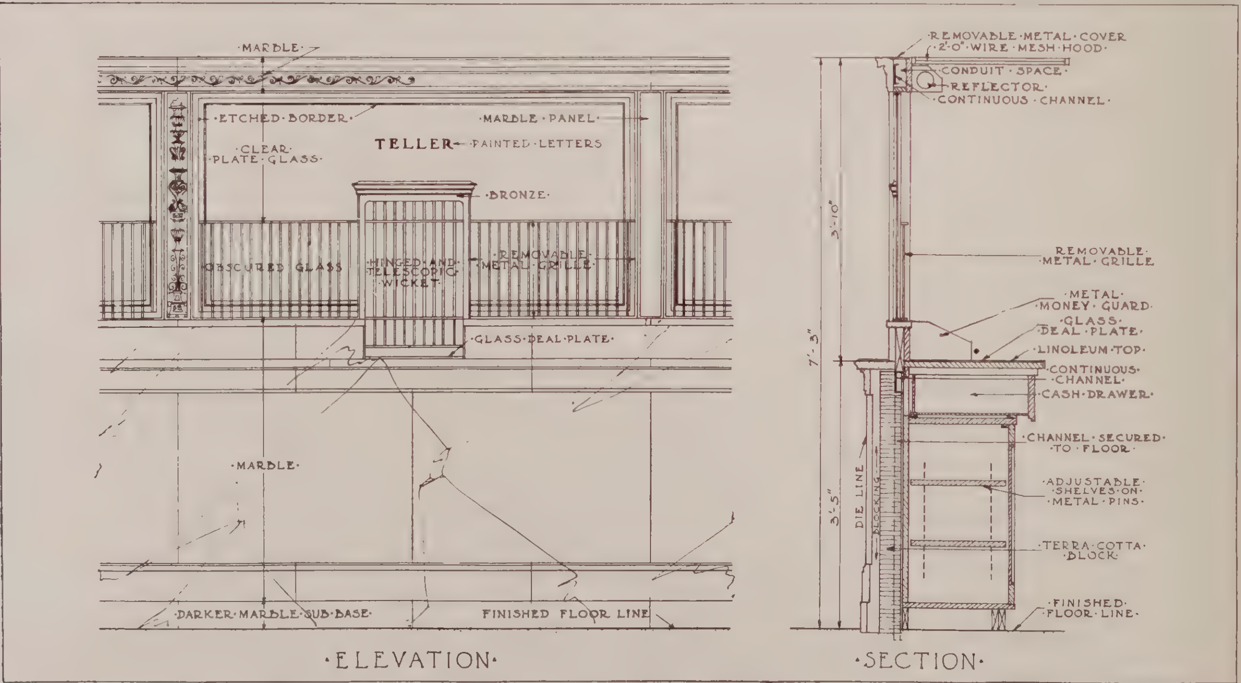
The grille back of the glass is for protection only, and would prevent anyone from readily clearing the counter of cash should the glass be broken. This grille should be made pivoted so that the glass may be easily cleaned. It used to be more the custom to have the glass in the screen obscure all over, which gave the screen too much of a "blank wall" appearance. At the present time some banks wish to have the glass clear all over, with only an etched border, but this in turn gives the working force no privacy. The happy medium is to have the glass obscure up to the top of the protecting grille, and the balance clear. The etched border adds a trifle to the design.



Detail of Counter Screen A in Wood

As the wicket openings in the glass (or "cut outs" as the glass men designate them) tend to weaken the sheets, it is permissible to have them made in three pieces, either with ground edges at the junctions, or small bronze members may be introduced without detracting from the design of the screen. This perceptibly lowers the cost of the glass, and should one of the pieces break later on a large saving is effected through not requiring the larger sheet extending from pilaster to pilaster across the screen.

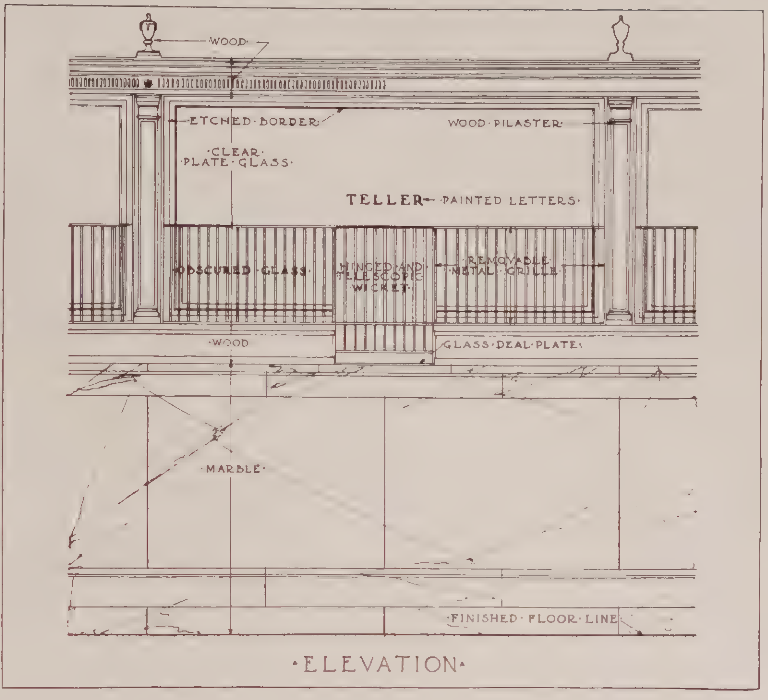
The designation of the wicket is an important item, and there are various ways of arranging it, the simplest being in gold lettering with black edging just a few inches over the top of the wicket opening; or it may be in bronze, placed in the frame of the wicket, as shown on screen "D." There is one objection to this in that it does not stand out clearly. The designation of a wicket should be easily discernible, and yet not so large as to disrupt the balance of design of the screen. Again, it may be in bronze and placed in the cornice immediately over the wicket, as in most of the earlier banks, yet this seems to be objectionable, owing to the fact that it is too much above the eye line. Or it may be an illuminated sign (which naturally means a sign of glass with architectural letters having hidden lights behind it) placed either in the cornice of the wicket frame or in the main cornice of the screen and immediately over the wicket. And again, there is an illuminated wicket sign that is attached to the cornice of the screen and projects out at right angles to the screen, but this latter arrangement seems to be efficient only in a long, not too well lighted banking room. Where the banking room is very well lighted by daylight, from either side windows or skylights, as it ordinarily should be, the illuminated signs may be regarded as unnecessary. Where there is a lack of good daylight, however, their use should be recommended as adding much to the bank's convenience.



Detail of Counter Screen C in Marble

The backing of the screen, and by this is meant the cupboards below the counters, should be kept as simple as possible. Each teller of course has a cash drawer, which varies in depth with the requirements and amount of business of the bank, but the usual depth is about 6 inches, and it should be arranged with a removable cash tray, the tray having approximately 10 spaces for different denominations of bills. The cash drawer may also be arranged at either the left or right of the teller, at the teller's preference. It must be hung on extension (and preferably ball-bearing) hangers.

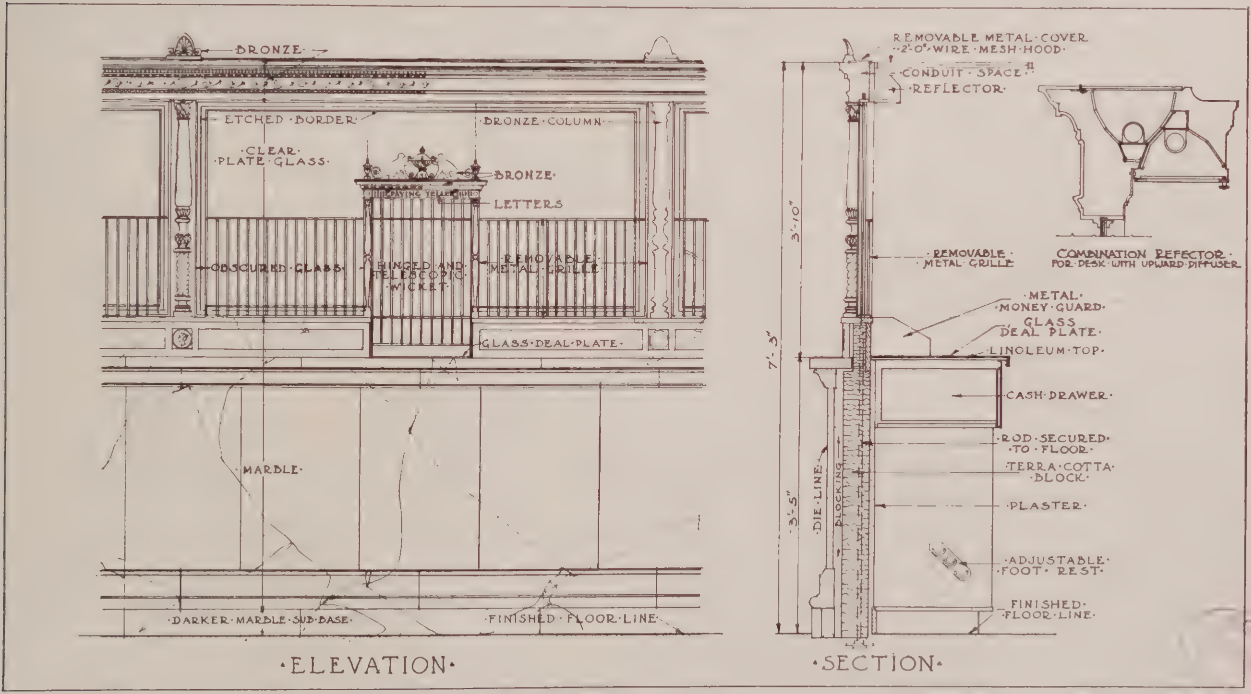
Very often there is a clear space under the counter which is left in that manner to accommodate either safe cabinets for books or portable omnibuses which would contain files, etc. In some cases the omnibuses have cash drawers incorporated in their construction, the idea being that at the close of the day's work the omnibuses with files, etc., may be wheeled into the vault for the night, thus saving considerable work.



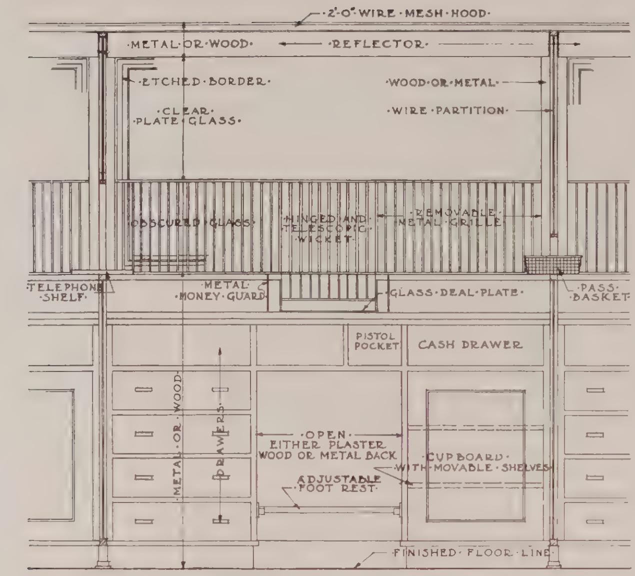
Detail of Counter Screen B in Marble and Wood

The practical height from the floor to the top of the finished counter should be approximately 41 inches, and the width 22 inches. Conduits for fan, telephone and electric alarm systems, etc., should be run around the back of the screen or buried in the floor and arranged to have their outlets at the open spaces underneath the wicket openings.

Cages are made of either ⅛-inch or 3/16-inch woven wire, and may be either bronze, steel plated bronze, or steel painted or steel baked enamel finish, according to the quality desired. The gates to the cages should be hung on ball-bearing hangers and arranged to close by either gravity or door check. Some bankers desire the paying and receiving cages roofed over with similar cage work, but we believe the 2-foot hood sufficient and satisfactory in most cases. The lighting of the counter is best attained by the use of reflectors extending the full length of the screen, the reflectors having ground glass at the



Detail of Counter Screen D in Marble and Bronze



Detail of Rear of a Counter Screen

bottom to soften and diffuse the light. The control of this lighting may be either by cords or chains directly back of the pilasters (in the corners of the cages) and arranged so that each cage will light up separately.

In illustration "D" is shown one practical method of combination lighting, whereby the banking room may be lighted indirectly from the top of the screen; also adjacent thereto is the downward reflector for the counter. It is not always practical to light every banking room by means of this reflector in the top of the cornice, unless one is satisfied with shadows, although in a great many instances it is successfully used.

In the illustration here are shown two practical though inexpensive check desks, one being for a center public space and one for a check desk against the wall. Both should be arranged with glass tops, slip compartments (usually 5 or 6 to a desk), combination calendar cases, pen racks and ink-well holders, also with waste paper receptacles. Reflector lighting for both types of desks should also be arranged for.

As to materials for these fittings, it is almost wholly a matter of taste, particularly as regards the marble, since there are so many varieties to choose from. Personally, the writer prefers a marble quiet in tone, but with just enough veining to give it character. Of course the general color scheme of the banking room should be taken into consideration. In selecting the marble for the screen, one should be selected that does not have to have too much wax inserted in the veining, as time not only dulls where the waxing exists, but very often the waxing falls out.

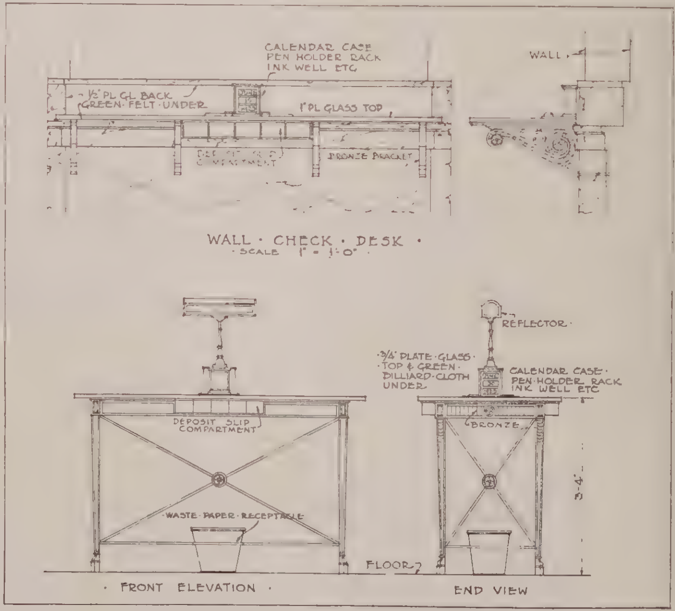
Mahogany or birch (and even quartered oak) may be used for the entire wood screen, or for that portion of screen which is wood above the ledge. The most satisfactory material for the upper portion of the screen is bronze, although white metal and even iron are sometimes used. If use is made of iron, it is well to pick out the relief in a modest color; if bronze, the ornamental portions should be cast, while the plain portions could be of heavy gauge drawn bronze which is just as satisfactory and fully as lasting.

Now as regards costs, these prices are naturally approximate, but yet near enough to give the designer or architect good working figures. The cost is arranged per lineal foot and includes backing, marble, bronze or wood, glass, grilles, reflectors, wire hoods, counters, necessary models, etc.

Scheme A $75 per lineal foot
" B 85 " " "
" C 126 " " "
" D 145 " " "

If the backing of the screen, such as counters, cupboards, etc., is desired in metal, add $4 per lineal foot, as the basis of these estimates is for counters of birch.

For banking furniture there has been reserved the smallest part of this article, yet it is indeed important. It has been found, however, that for banks costing up to $100,000, and even including those up to approximately $175,000, it is quite a hard matter to keep the client from buying stock furniture almost throughout. Yet there are purchasable so-called "stock" desks, directors' rooms table and chairs, that while "stock" yet are of an extremely high grade character both as to design and construction. Naturally, it makes the bank more distinctive if it is possible to keep the furniture in complete harmony with the balance of the building, that is from the personal design of the architect or through his selection of furniture designed and constructed by specialists in that class of work. The cost of the furniture is generally at the most but a small item in comparison with the building's total cost.



Details of Two Check Desks

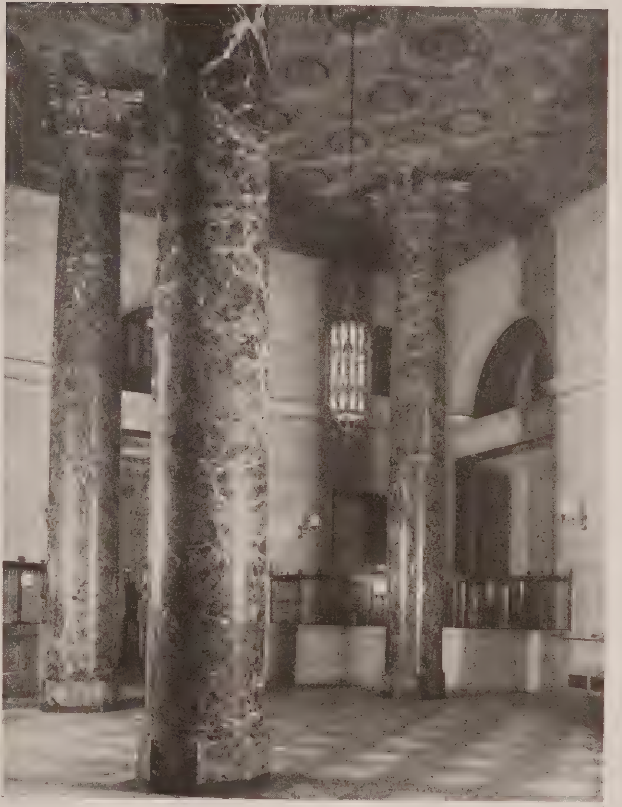
Materials for Bank Interiors

By F. A. FAIRBROTHER
of the office of Albert Kahn, Architect, Detroit

IT will be the endeavor in these paragraphs to discuss the different kinds of materials most commonly used in the interiors of modern banks and banking rooms, and to consider them both from the standpoint of their fitness for use as materials of beauty, and thus having distinct parts as elements of the design, and from that of their suitability as aids to comfort and convenience.

We find that modern banks are very seldom housed in cheap looking buildings, or perhaps it should be said that enough money is usually spent on a bank's quarters to make it possible to secure results that are not commonplace. Addison in one of his numbers of the "Spectator" has a pleasing allegory in which he tells of visiting in a dream the great hall of state of the fair queen known as "Publick Credit," seated on a throne of gold and attended by a retinue of secretaries and others. Heaped about were great piles of gold and silver. This queen was most susceptible to sudden changes of popular favor, and changed color and countenance with each wave of unrest in the money marts; the piles of gold and silver turned to paper, and her retinue and surroundings became dismal indeed at periods of depression. Such a fate might be prophesied for the bank which occupies shabby or old fashioned premises.

For the walls of a banking room of any pretensions, which implies a reasonable floor area and height, it is natural to consider first marble or stone because of their appearance of strength and the pleasing textures which may be obtained by their use. If care is exercised in the selection of the marble, and if too much elaborate veining is not allowed to confuse the surface and destroy its dignity, it seems that no better material can be found. It is durable without a doubt, its color can be so selected that the surfaces are not tiresome to look at, and it can be kept clean without great difficulty. A fine hone finish will lessen the shine and glints of light which are present where the surface is polished and will give a soft, even wall surface which is pleasing to the eye.

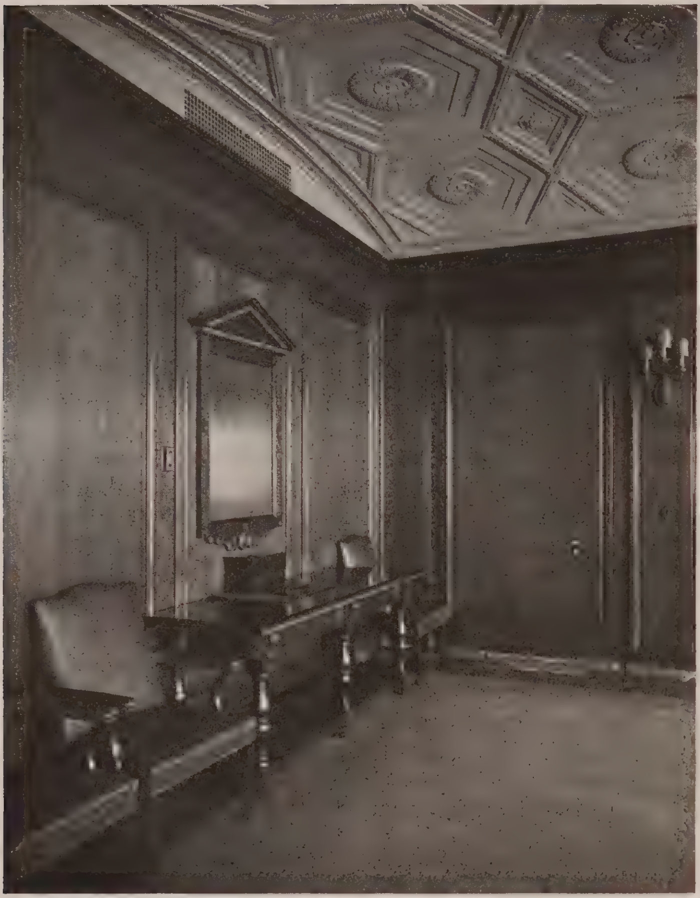


Banking Room, New York Trust Co., New York
Walker & Gillette, Architects
Richly colored marbles and painted ceiling contrasted with light marble walls

Where marbles of rich veining and pronounced color are used they should be placed with care and their use made to count strongly in the design. In the banking room of the New York Trust Company on Broadway the richly veined columns of reddish purple with bronze capitals contrast strongly with the simpler colored marble used on the walls. A highly veined and colored marble on the walls would have impaired the appearance of the room.

Stone as distinguished from marble is more seldom used, but where it is found it would suggest itself as suitable for pilasters, columns and such structural elements, rather than solely for wainscots. Stone where used on interior walls does not have the advantage of weathering as on the exterior, and it would therefore seem desirable to select some variety which has a pleasing texture to begin with. This would limit the choice somewhat, and would point to such types as travertine which has a very pleasing texture in itself, and while well suited for interiors is not so suitable for exterior use in climates as severe or smoke-laden as ours. If large surfaces of ashlar are used, limestone is quite suitable, it being possible if desired to procure some qualities which have an interesting texture produced by faults in the structure of the stone. Combinations of marble or stone with plaster will be necessary where the cost of covering the entire walls with marble or stone would be prohibitive.

The use of wood for banking room walls suggests smaller and lower rooms, excepting where it might be used as a wainscot, in the more private parts of the bank, such as the walls of the working spaces back of counter screens and cages, in the directors' room, women's room, or such accessory portions. Plaster walls when lined off with artificial joints, to represent stone, give an impression of strength, and while it is quite certain that they



Directors' Room, First National Bank, Detroit
Albert Kahn, Architect
American walnut panels and modeled plaster ceiling

deceive no one, they offer an inexpensive means of obtaining a desirable effect. To preserve the illusion at all it will be necessary to have occasional "blocks" of the material painted with slightly different shades.

Interesting results can be obtained by the use of tiles. Their use implies some degree of color in the design, but if due restraint is observed in the treatment of the walls the necessary effect of dignity may be preserved. The use of tile suggests somewhat rough and picturesque surfaces, and for this reason it would seem to lack in large measure the proper qualifications for giving the dignified effect which banking rooms must have.

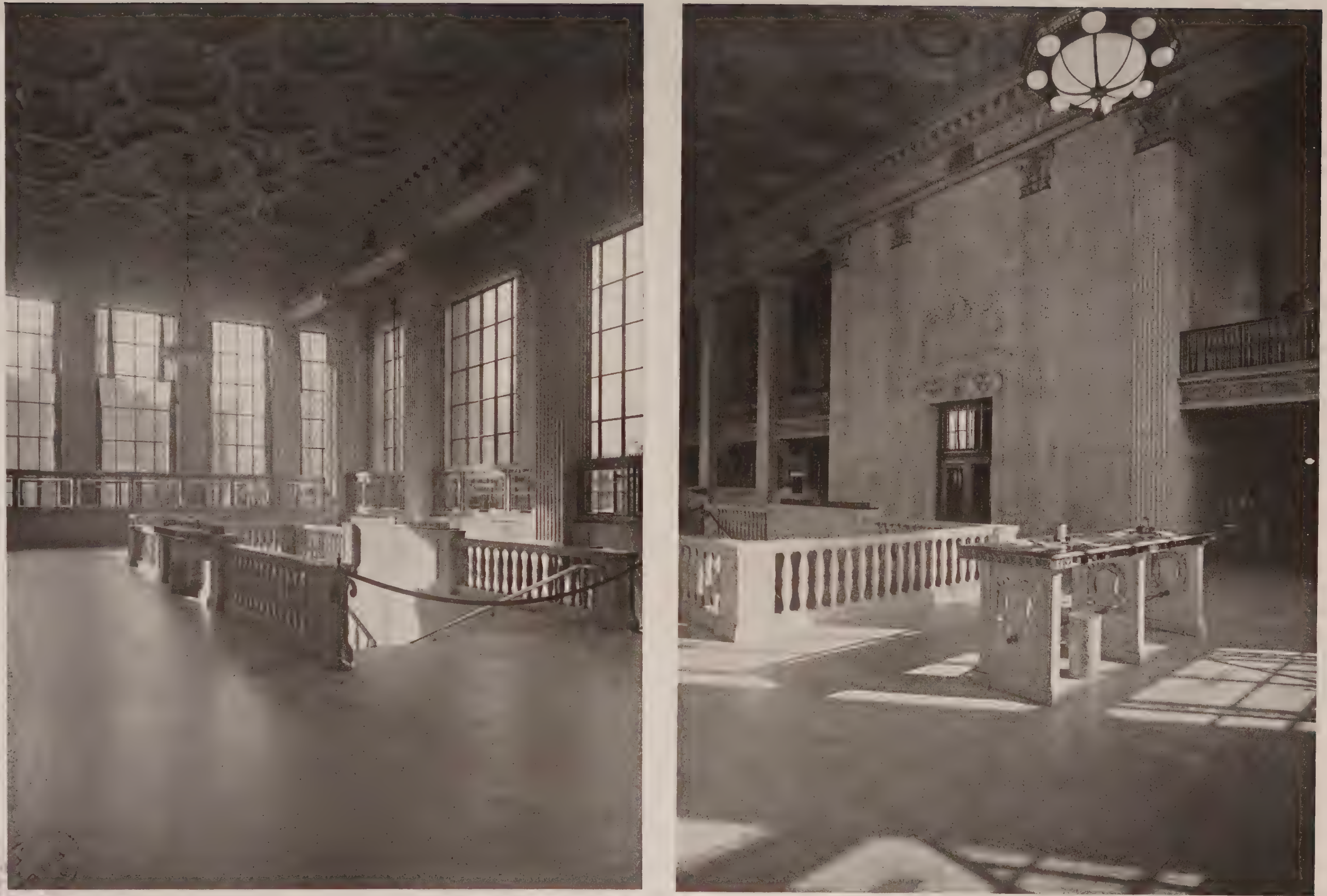
The ceiling is such an important part of the design of the banking room that it usually receives as much care in its treatment as the side walls or counter screens. The choice of materials for the ceiling is so limited that we seldom think of anything but plaster, and often the degree of opulence to be exhibited in the design of the banking room may be measured by the amount of ornament which is used. The plaster ceiling can be made very rich in color and elaborate in ornament, as in the First National Bank in Detroit or the New York Trust Company already mentioned, and still be in harmony with rather severe wall treatment. The ceiling of the New York Trust Company is of plaster painted a light wood color with high coloring in the panels and rosettes.

Should glass, however, be used in the ceiling, the amount of ornament and color in the surface around the glass would probably be lessened. If the plan is such that the banking room is lighted from overhead, as would almost always be necessary for an individual bank on an inside lot, a rather extensive area of glass would be required in the ceiling. This glass may be made a very decorative adjunct to the ceiling design, and examples can be found varying from rectangular panes of ground glass to the most elaborate designs in figured and leaded glass. If an elaborate arrangement of ornamental glass is deemed necessary to the design, and leaded lights are used, it will probably be found necessary to use bars of some sort carried straight through the design at suitable intervals for the support of the glass. Members of this sort are small in size, and it requires care to arrange their support from points above the glass in such a manner that unpleasant shadows will not be thrown on the surface.

Then, too, it will require care to arrange the skylight in the roof so as to avoid shadows over the surface of the ceiling light, and some means of cleaning the glass from above must be provided.

Acoustical felts, applied on the walls and ceilings, will absorb most of the noises from the streets as well as deaden the sound from batteries of adding machines and typewriters, making for comfort and efficiency in a great degree. Provision for using such sound-absorbent materials should by all means be made where any considerable amount of work is done with machinery or any device producing much noise. The secret of success in the use of acoustical felts is in having the sound-absorbing material of a quality and thickness which will make it impossible for sound waves to be reflected from the protected surfaces. Also, for the sake of appearance, to use some such an arrangement as muslin panels which can be drawn so tight on the wooden frames which support the felts that they will not sag or bulge and which will offer a satisfactory surface for painting and decorating. The use of these materials for reducing the amount of noise may be rather a liability in the eyes of the designer, but it will have a decided effect on the comfort and efficiency of the working force.

Windows in the banking room are usually of good size, and in some instances very large indeed. Wood could hardly be made to satisfy the design of a large sized banking room window because of the bulk which would be required in the frames, mullions and transoms, let alone the sash, so we find metal frames with steel casement sash most often used. To give an appearance of strength and a sense of protection to the banking room, the windows are



DETAILS OF MAIN BANKING ROOM

FIRST NATIONAL BANK, DETROIT, MICH.

ALBERT KAHN, ARCHITECT

commonly provided with grilles, at least across the lower portions, and these features of the design give an excellent opportunity for study in the ornamental effect of iron or bronze work. Metal panels used in connection with the grilles afford a satisfactory means of concealing the edges of mezzanine floors or balconies and still retaining the appearance of a single window in a large opening.

The counter screen is the portion of the banking establishment with which the public comes in closest contact, and is probably examined with a more critical eye than any other portion. Because its position is near the eye, and also because of the time one is often compelled to spend in line at a teller's wicket, the screen attracts close attention. For this reason it should be of material and workmanship which will bear close inspection. Examples of all possible arrangements of counter screens may be seen in the banks of almost any city. If we examine them all we shall doubtless find that bronze is generally used for the upper parts of the screens, with marble in the lower parts. Next in number we shall probably find counter screens with marble below the counter line and marble pilasters and cornices above, with small metal frames or mouldings to hold the glass. We shall also find a few examples of iron used for the upper parts, and some where wood is used for the whole screen. There is not much question but that marble is the most suitable material for the portions of the screen below the level of the counter; neither is there much doubt that bronze is the best material for the upper portions of the screen.

It is important that the floors of the banking room be well considered in selecting the materials of which they are to be made. Not only are the surfaces subject to severe wear, but in the public portions they may have to bear the added test of being frequently tracked over with muddy footsteps and spotted with water from dripping umbrellas. In the private or working portions of the bank the surface must also, in addition to the normal walking about of employes, stand the wear incident to the trundling around of book or file busses.

For the public portions of the banking room it is fitting that the floor be made part of the design of the room. The material, of course, does not need to be especially suited to foot comfort or quietness. For purposes of design as well as for wear, marble or stone is most desirable. Marble can be found in suitable colors and tones to secure almost any desired result. For general wearing qualities, the best is probably the hard, gray varieties with very little veining. The gray Tennessee is very largely used, and in color and tone gives a desirable surface, lending itself well to combinations with other marbles. The gray is somewhat easier to keep clean than white, and is more restful to the eye. Marble of other colors is often used in forming borders and patterns. The problem in such cases is to find marbles having the imperfections which we call veinings of the proper colors and tone, and at the same time of sufficient hardness to wear evenly with the fields. Some of the heavily veined marbles are rather soft in character, and would not give satisfactory service where subjected to wear from thousands of feet. There are, however, several kinds of marble suitable for service on floors and still of pleasing colors, so that almost any desired combination may be obtained.

Foreign marbles have been most extensively used where decorative effect has been desired, but there are many domestic marbles which can be used to advantage and which will give excellent results.

Much stone has been used of late in floors, sometimes in combination with marble or other materials. The stone most favored is travertine, which unquestionably is charming in color and texture and has most excellent wearing qualities, judging by the durability of ancient structures built of this

Guardian Savings and Trust Co., Cleveland
Walker & Weeks, Architects
Coffered and painted plaster ceiling in monumental room

material. It has very desirable "non-slip" qualities, and therefore is an excellent material for use on stairs, ramps and the like, and its cost is little more than marble. Marble mosaic is used frequently and gives very satisfactory service, besides lending itself to interesting color schemes. The cost is less than marble in large blocks, and of course it is easier to lay. Its general effect naturally is not as dignified as a floor of marble or stone, but its wearing qualities, when properly laid, are eminently satisfactory. Terrazzo has the advantage of being plastic, and can be obtained and applied quickly. It is somewhat limited in its color possibilities, and suggests itself for use in places where funds are not available for the more impressive materials. The surface should contain at least 90 per cent of marble chips, and it will be more compact in appearance and seem more like a marble floor if the small marble chips called *terrazzini* are used.

This material can be laid in several ways,—in rectangles without apparent joints, with areas marked off by lines of marble cubes, or by means of brass or bronze division strips, thus giving opportunity for considerable variety in design.

There are many varieties of tile available for the floor of the public spaces of the banking rooms, and countless designs can be developed with this material. No fault can be found with its wearing qualities. With the hard, vitreous tile the choice of color is somewhat limited. If the rougher glazed or semi-glazed tile is used, color possibilities are multiplied, but results would seem apt to be less dignified than with the simple, smooth tile.

Rubber tile can be obtained in almost any color and size. Great improvements have been made in this material since the first interlocking rubber tile floors were used. It can be obtained in squares up to say 18 inches, and in long strips for use in borders and, if desired, made to imitate the veining of marble. Naturally the illusion is not perfect, any more than scagliola imitates marble with fidelity, but the material has desirable qualities. It is quiet and easily cleaned, and the tones in general are soft. It can be laid directly on a troweled cement floor, and thus takes up less floor thickness than marble or tile.

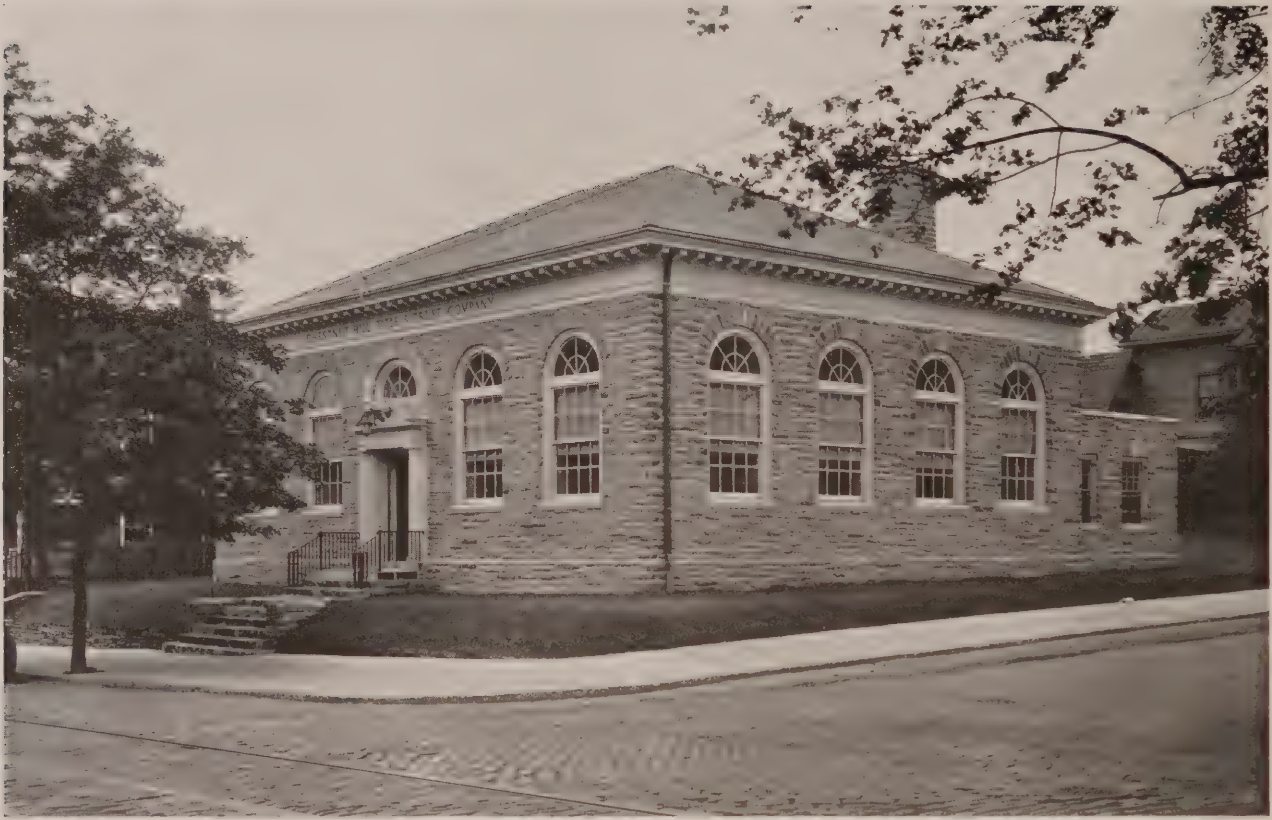
When we consider the most suitable types of flooring for the working spaces of the banking rooms, we must first recognize that one of the prime requisites is that the material be quiet, *i. e.*, absorbing the sound of footsteps and the movement of furniture on it, and also that it give foot comfort. To fulfill these requirements the material must be elastic and still hard enough not to be easily dented by chair legs, table legs and the like, and with a surface dense enough to be easily cleaned. Among the materials of the sort outlined linoleum or linoleum tile are the most common and among the most satisfactory. There are several makes or brands of linoleum which can be laid in lengths as desired and in widths of 6 feet. Linoleum tile are obtainable in almost any size, and can be laid in a variety of patterns. The tile may be laid close together or with narrow strips of a darker color between them. Linoleum in strips and that in the shape of tile is secured to the under surface of wood or masonry with a special cement, presents a very comfortable and durable wearing surface, and is quite satisfactory in appearance.

Granulated cork compressed into tile of sizes up to 18 inches square makes an almost ideal floor for the working space. It is quite resilient, though perhaps it is a little less easily cleaned than the linoleum, and wears well. This material is of neutral tones and restful to the eye as well as to the feet. Numerous composition floors are manufactured and applied in plastic form. Some of them make a satisfactory working floor, but so many of this kind of materials have proved unsatisfactory that only careful examination and comparison with existing installations can be depended upon to determine whether they should be used. Wood is used in the working spaces in many banks where conditions will not allow the use of a better kind of floor, but it is not as comfortable as linoleum or cork and is not as easily kept clean. Where employes are required to stand for long periods, it is usually found that mats of linoleum or rubber are required to relieve the weariness that comes with standing.

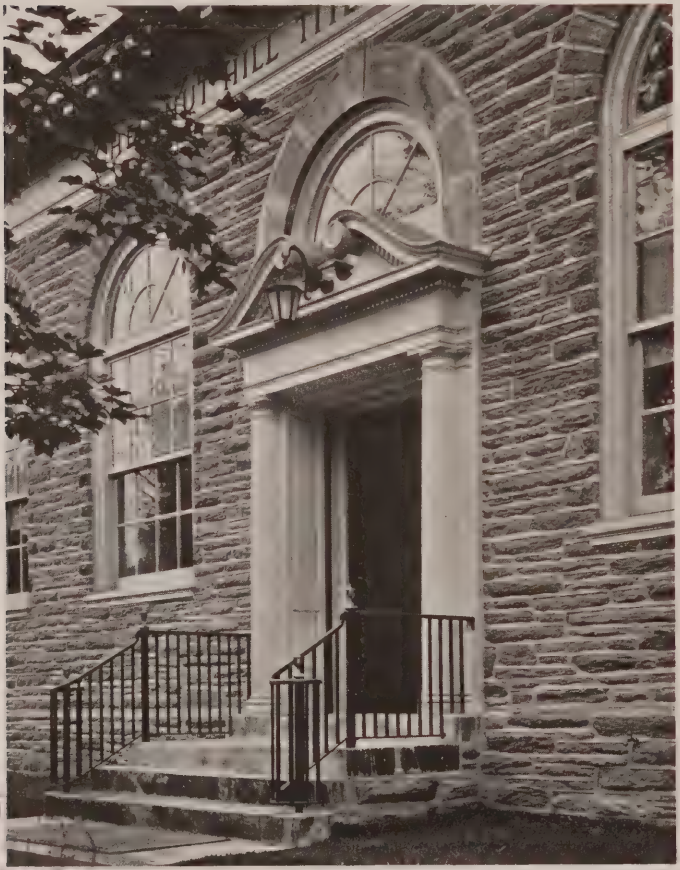
For ease of cleaning and to avoid the worn or scrubbed-off appearance which occurs where the bases and floors join, it is wise to insert some member which will not show the marks of the mop or scrubbing brush. A narrow strip of marble, say 3 inches high around the walls below the wood base or wainscot, will afford the desired protection and add to the appearance of the room. It is possible also to obtain sanitary coved bases made of cork or linoleum for use with such floors.

Counter tops, referring to those in the working parts of the bank, can be made with exposed surfaces of wood, linoleum, rubber, cork, or even marble or glass. Very hard and durable surfaces should be used where coins are handled and counted. Glass is the best material for use at the deal plates. It can be obtained in black, and if finished with a ground surface will not show scratch marks from constant handling of coins. If white glass is used it is also well to have the surface ground. For the other parts of the counters some softer material is desirable, and for this purpose linoleum laid on a wood or metal base is best. It is cemented down, has very few joints, and is quiet and clean. It can be obtained in good shades of brown or green. The edges of the counters should be protected with a metal moulding to keep the linoleum from being broken off or becoming loose. Cork can be used in much the same manner as the linoleum. Its wearing qualities and appearance are good, and as the blocks are cut very true and can be laid close, the numerous joints will do no harm.

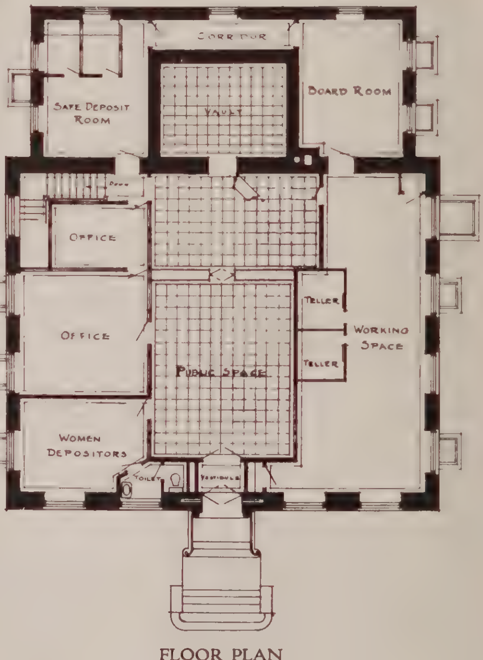
It is hoped that enough of the advantages and objections to the most common materials have been pointed out here to be of some service in specifying material for a modern banking house interior.



GENERAL VIEW OF EXTERIOR



DETAIL OF ENTRANCE



FLOOR PLAN

Type of construction, Semi-fireproof; Exterior materials, Stone from local quarry, slate roof, limestone trimmings; Interior materials, Concrete floors, terrazzo and marble finish, sand-finish plaster on metal lath; Windows, Wood, double-hung; Counter screens, Marble, steel and glass; Vault and safe deposit provision, Vault for money, and safe deposit sections; Special departments provided for, Retiring room for women depositors; Heating, Direct hot water system, radiators in recesses under windows.

CHESTNUT HILL TITLE AND TRUST COMPANY, CHESTNUT HILL, PA.

A. H. BROCKIE, ARCHITECT

The Individual Bank Building

MEETING THE NEEDS OF SUBURBS AND SMALL CITIES

By WILLARD J. BALL
of Thomas M. James Company, Architects, Boston

THERE has been evidenced during the past few years an increasing demand on the part of banking institutions for individual buildings, devoted entirely to their particular needs. To one who has had the privilege of watching this growth over a period of 15 or 20 years the development has not appeared extraordinary, but on the contrary it has been a slow but steady process of evolution. The results are to be appreciated in all of our large cities and in many of the smaller communities from coast to coast. There has been a marked stimulation of civic pride in most instances, while public appreciation of and a desire for more harmonious surroundings has reached a higher level. It is not meant that this one type of building has been the only one responsible for this tendency on the part of the public, but it is sincerely believed that it has had a great deal to do with it. The profession, always modest, may yet assume that its years of patient work for the greater public appreciation of the fine arts have counted for something. Certain it is that such buildings as have been designed, especially during the past five years, are sufficient proof of the sincerity of this feeling on the part of the architectural profession, and that in this instance particularly architects may claim their rightful share in the working out of an especially difficult problem.

The public reacts quite consciously to the beauty of these individual buildings,—first and foremost, undoubtedly, because of the fact that the buildings house banks; second, because of their simple and dignified appearance; and third, because the people themselves can have some part in the functioning of these institutions, and can point with definite, personal pride to *their* bank. This process of education of the public has not been easy, but like all developments, where conscientious, hard work towards this end has been done by any group or by any person, the results have always justified the means. To those who have labored in this particular field of bank architecture there is a sense of pride, and they hope it is justifiable, because they have tried to look at the problem as in a state of development, a problem which has been constantly changing and becoming more complex in its organization, due to the greater demands of the modern business world upon it.

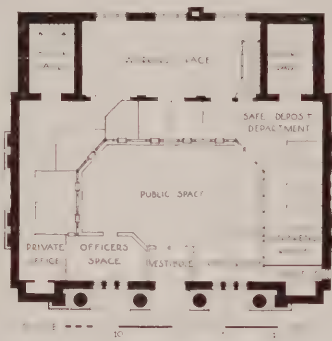
The writer, looking back some 20 years, remembers the dingy and dark banking rooms of Boston and New York, where the officers were almost inaccessible to the general public, and where the feeling of the customer was usually one of fear in which there was certainly no particular personal feeling of gratification because of the fact that personal business dealings were transacted at such an institution. He also can picture still the very inadequate provisions made for taking care of the general public, and the still more severe conditions imposed upon the workers in the institutions. The early efforts at that time of several members of the architectural profession are worthy of note, and although no particular reference to individual architects and their work will be made here, many of these institutions still remain and most of them, which were developed during the five or ten years immediately after the period we have just mentioned, are still adequate for the needs of the institutions, or have been made so by recent alteration work.

These banks, however, show the almost utter unfamiliarity of the architect with the bankers' problems. Departmental needs had not, it is true, become so great or so complex as at the present time, but the approach by the general architectural firm towards the banking problem in the early days cannot be said to have been one which produced the best results. There has been, gradually, an attempt at specialization on the part of many of the profession which has brought about distinctly good results. In fact it may be said that unless an architect does specialize on some one or two classes of work he will never attain the highest possible results. One knows of the splendid results of this specialization in such work as railroad stations, hotels, schools, theaters and hospitals—why not the bank? There are a few architectural firms or individuals in the country who have made such a serious and prolonged study of the banking problem from the architectural standpoint, and to them belongs the credit for having developed this most modern and individual type of building.

It is believed, and not without cause, that no successful solution can be reached without a painstaking survey of the needs of the particular institution under consideration. Nay, one will go so far as to say that correct planning of a bank depends entirely upon the successful analysis of the routine of the bank in all its phases. Very few people who have no particular knowledge of banking business have any idea of the very complex nature of the departmental functions. In the main the fundamental processes of banking are the same, but each institution has its own particular methods which it adheres to because it has found them to be of greater service than other methods. All of this has its effect upon the routing of items through the bank, and therefore, necessarily, a direct effect upon the planning of the building.

Right here let it be said, however, that it is sincerely believed that unless an architect has met a great many of these banking problems, he will be tempted to complicate his plan too greatly. Many architects fell into this pit during the early stages of their work. It can be said, however, that the simplification of the equipment of the various departments has been the result of many years of study, and has of late years proved that it does take care of the bank's needs in a way that the more complex equipment could not do. Changes in the system and expansion from year to year cannot be absorbed by the over-elaborated equipment installations, whereas the standard unit equipment can be applied to satisfy practically any need with simple changes.

Upon visiting a bank with a view to planning for its needs, the architect should have in mind that he needs certain information. He should have a complete list of the personnel of each department. He should be able in a short space of time to follow the routings of all items from the time they come into the bank until the time they are charged on the bank's books, or until they leave the bank. There are so many of the details of banking which do not particularly concern the architect that it is very difficult for the non-specialist to obtain the information which will help him in his planning. This, of course, comes only through the study of a great many varying problems in banks of widely different types.

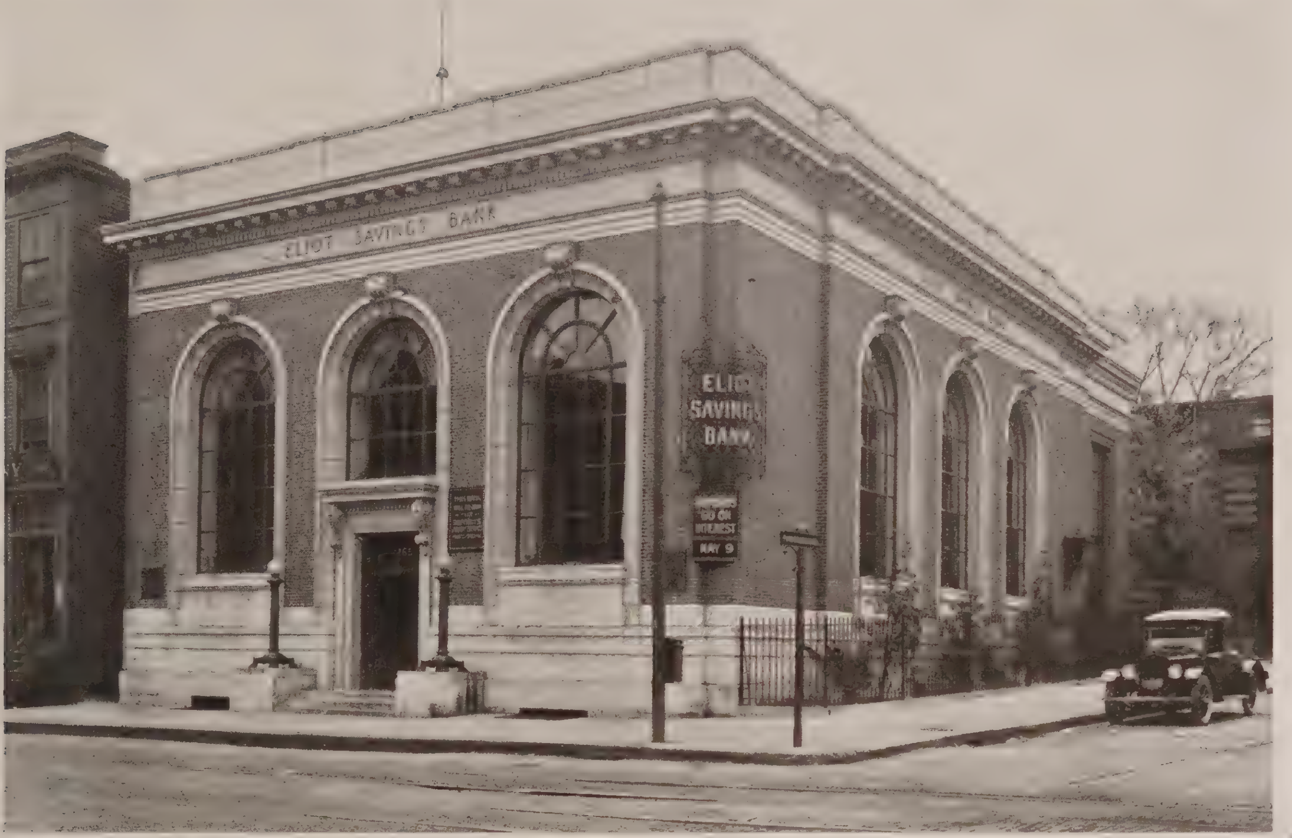


First Floor Plan

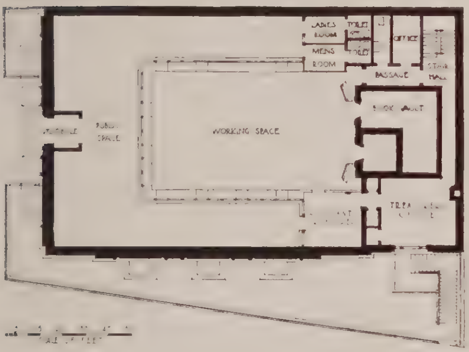
Detail of Front
Norwood Trust Company, Norwood, Mass.
Thomas M. James Co., Architects

Often one has to deal with the so-called one-man bank, where there are perhaps two or three clerks other than the cashier or treasurer. Such an institution has perhaps reached the limits of its capacities under the present system, and desires in its new building to have such planning as will take care of its expanding business for a good many years. This has meant the introduction of the so-called check teller system which is in use now pretty generally throughout the east and west with, of course, certain modifications, but the commercial bank has found it greatly to its advantage. A study of this system as worked out in any of the larger banking institutions will be of great benefit to any architect wishing to undertake the solution of the commercial bankers' problem. Under this system, in general, all of the items coming into the various departments and listed therein are passed on to a central clearing house or check teller, or pivot department, as it is variously called. Here the records of all items passing through the bank are kept, and this offers a means of checking back against each department at the end of the day's work and locating readily any error made by any department, in fact locating the individual making the error. From this department are routed the items to the bookkeepers who handle the bank's own check, the discount department, collection department, and the transit department, providing the collection department is large enough to be split up and have a transit department. This is the framework of the bank. The tellers in the cages are meeting the public, whereas the check tellers, the bookkeepers and the transit department are busily engaged keeping the accounts and sending the items to their proper destinations. The architect's problem, then, is to so analyze this routing as to obtain the quickest disposal of all items. One could, of course, go through a more detailed account of the framework of a bank, but this would entail too lengthy a description for the purposes of this article. Let it merely be said that there are over 40 departmental titles, most of which are found in every bank and all of which have to be taken into consideration by the architect in planning.

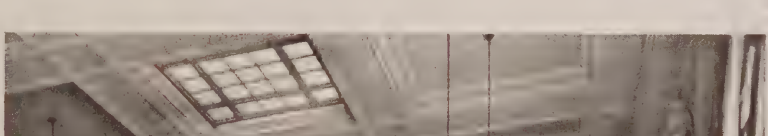
Only commercial banks have



GENERAL VIEW OF EXTERIOR



Type of construction, Concrete; Exterior materials, Granite, Indiana limestone and brick; bronze doors; Interior materials, Marble, bronze, mahogany and plaster; Windows, Wood; Counter screens, Marble and bronze; Vault and safe deposit provision, Security and book vaults; vault for storage in basement; Type of lighting, Direct; Heating, Steam; Date of general contract, September, 1917; Total building cost, $95,000; Cubic foot cost, 48 cts. A mezzanine floor at the rear provides space for trustees' room.



BANKING ROOM

ELIOT SAVINGS BANK, ROXBURY, MASS.

THOMAS M. JAMES CO., ARCHITECTS

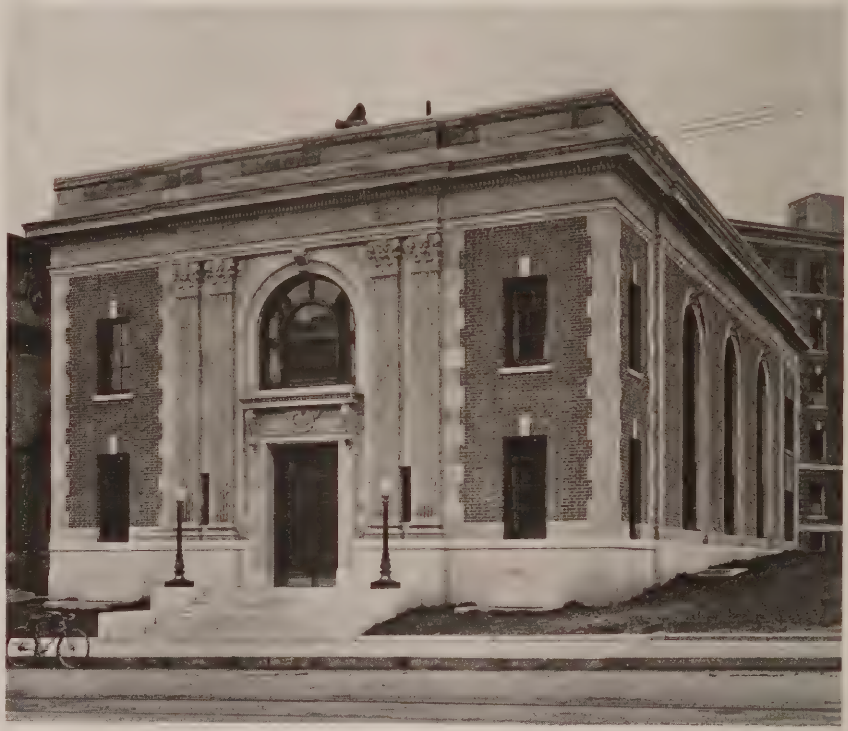
been mentioned. The savings bank problem is very different, and while it is not as complex as the commercial bank, still it requires a very definite study of its needs. In most instances, the so-called "island" plan, with the working force in the central portion of the island, adjacent to the vaults, and the public on the front and two sides, has worked out to the best advantage. The savings bank problem requires that it employ only a small force, and that each clerk necessarily has several duties. Also the bookkeeping department has of necessity to be located near the tellers' windows, or at least this has been up to the present the accepted arrangement. There will, no doubt, soon be other interesting developments.

The modern system of bookkeeping has introduced the machine. There is no question as to the utility of the bookkeeping machine when used in the statement department. There has been no better solution offered, and it seems to meet every need of this department. On the question, however, of keeping the commercial department ledgers, bankers are about equally divided for and against. Many of the banks which during the war took over the machine posting of commercial accounts, have now gone back to the hand-posted ledger, either the loose leaf or the old "Boston" ledger. It will not be attempted at this time to enter into a discussion further, as there are points it is believed both in favor of and against the use of both systems.

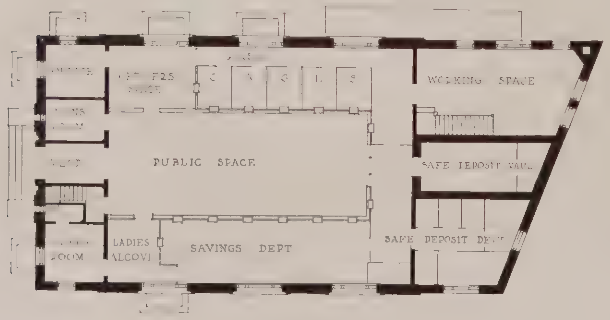
So much of the work of the bank can be done in one large room that it was most natural to develop the high ceiled, main banking room with large windows wherever possible, with a skylight for both light and ventilation. The vault, usually placed at the rear and accessible from the working space and also the public space for the accommodation of safe deposit customers, was the next step. By placing this vault in the rear of the building, it was possible to obtain a safe deposit department and a machine room on the first floor in back of the rear wall of the banking room, and above this a mezzanine floor accommodating the directors' room and possibly additional working space.

Variations of this plan have been made in order to fit special needs, placing the directors' room on the mezzanine at the front of building and giving opportunity for closed private offices on the first floor leading out of the officers' space, also an opportunity for customers' rooms, etc., leading directly from the public space. Where the directors' room is placed at the front of the building, the rear mezzanine can be used for expansion of the bookkeeping and check tellers' departments, as well as the transit department. It is easy, therefore, to see how well this individual building fits the needs of the average bank.

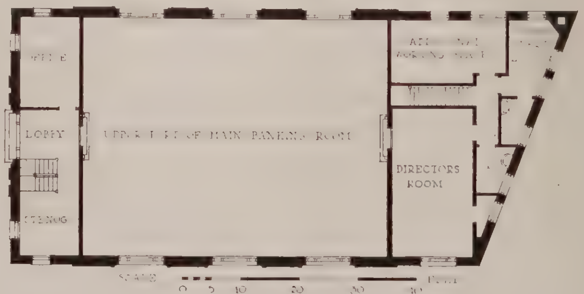
The exterior, of course, is an expression of the interior, and it is possible to obtain many variations of practically the same scheme.



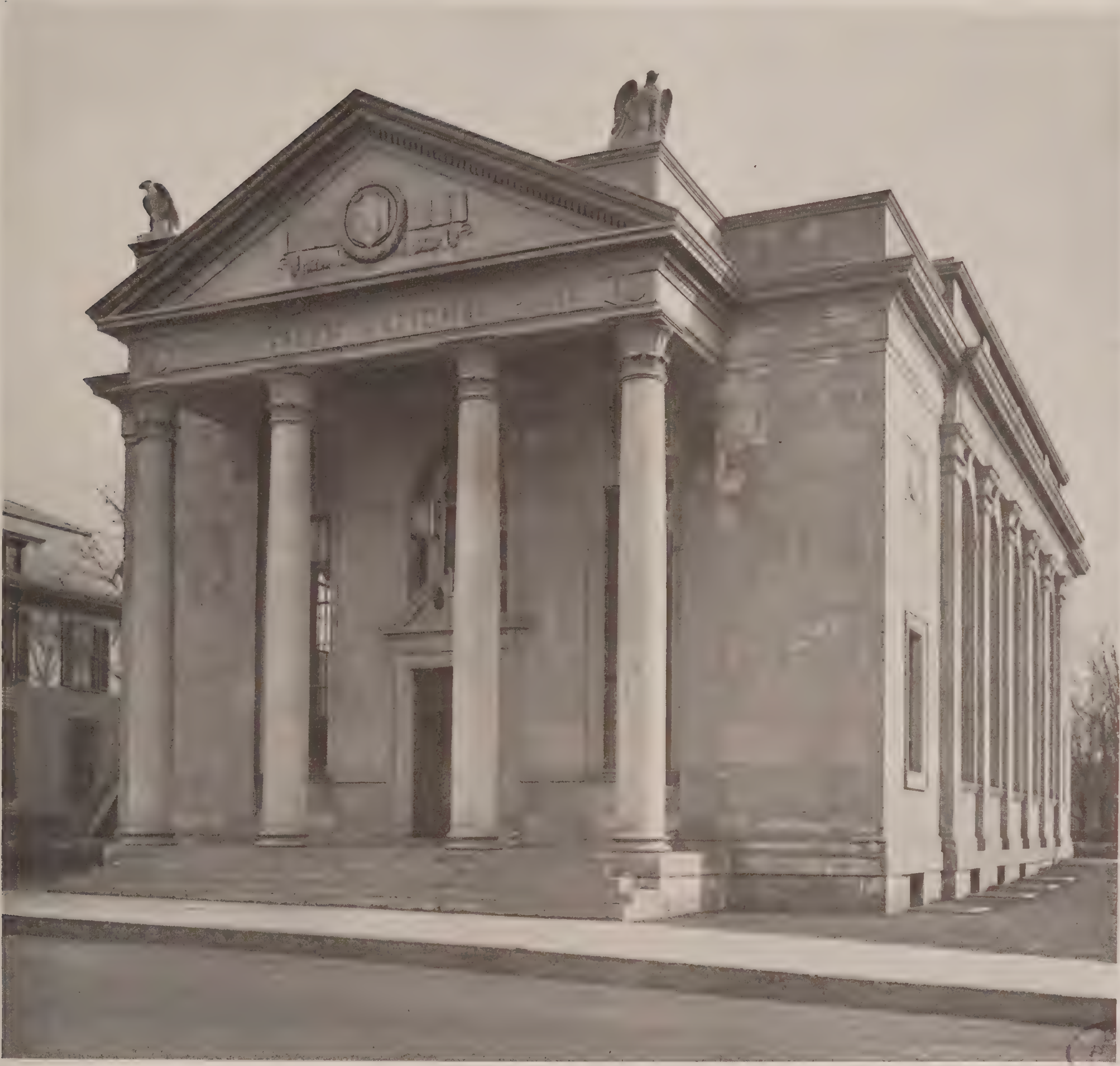
General View of Exterior
Ticonic National Bank, Waterville, Me.
Thomas M. James Co., Architects



First Floor Plan



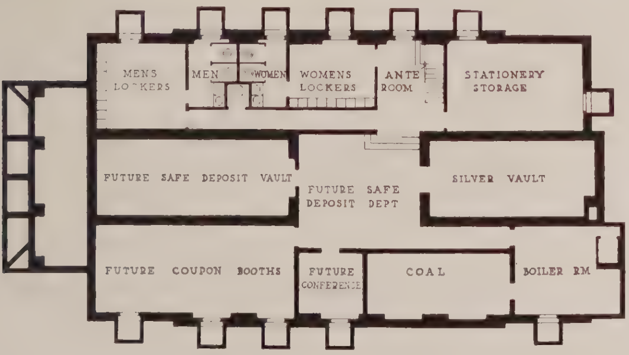
Second Floor Plan



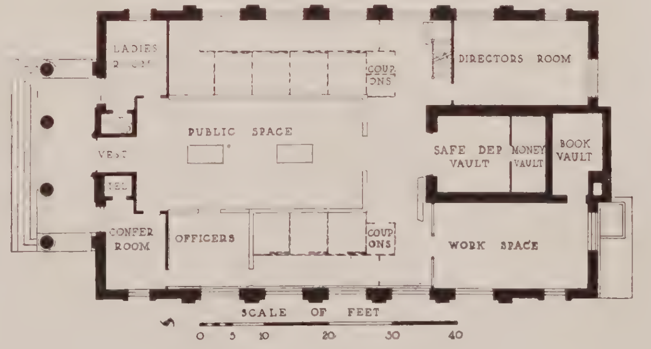
Photos by Tebbs Architectural Photographic Co.

GENERAL EXTERIOR VIEW

Type of construction, Fireproof, Exterior materials, Limestone; Interior materials, Marble and plaster; Windows, Steel; Counter screens, Marble; Heating, Steam; Total building cost, Approximately $175,000



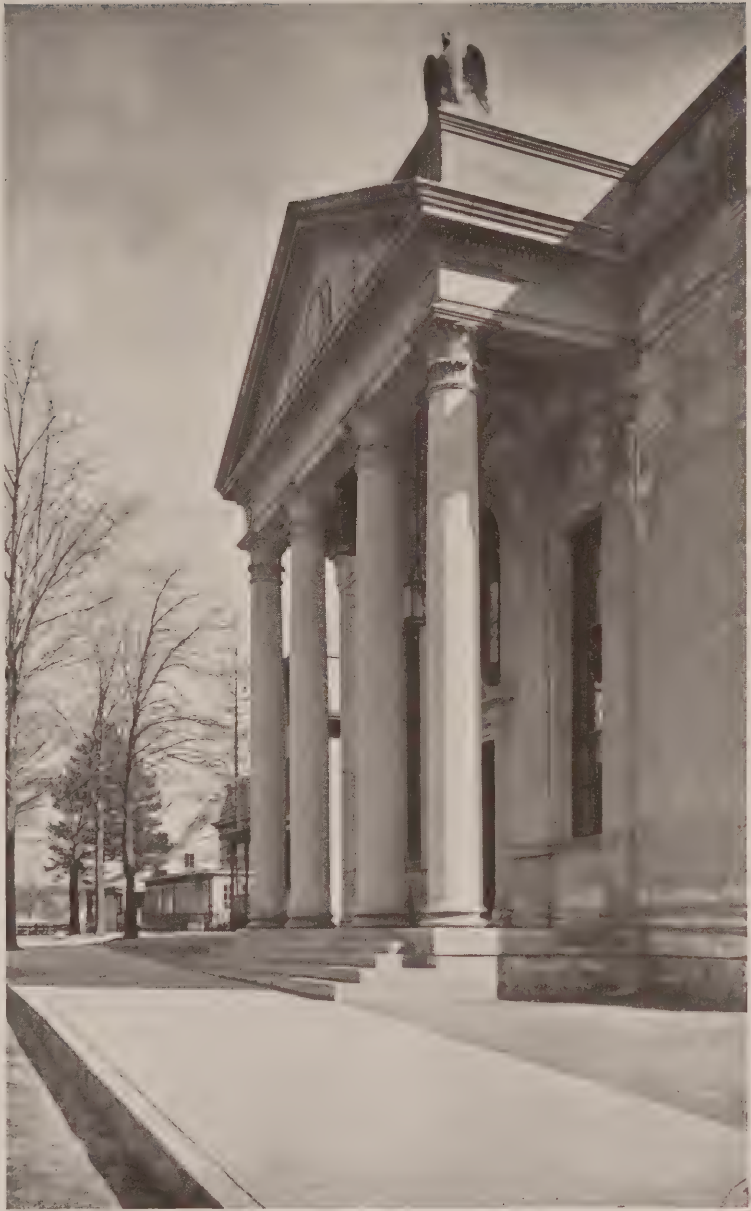
BASEMENT FLOOR PLAN



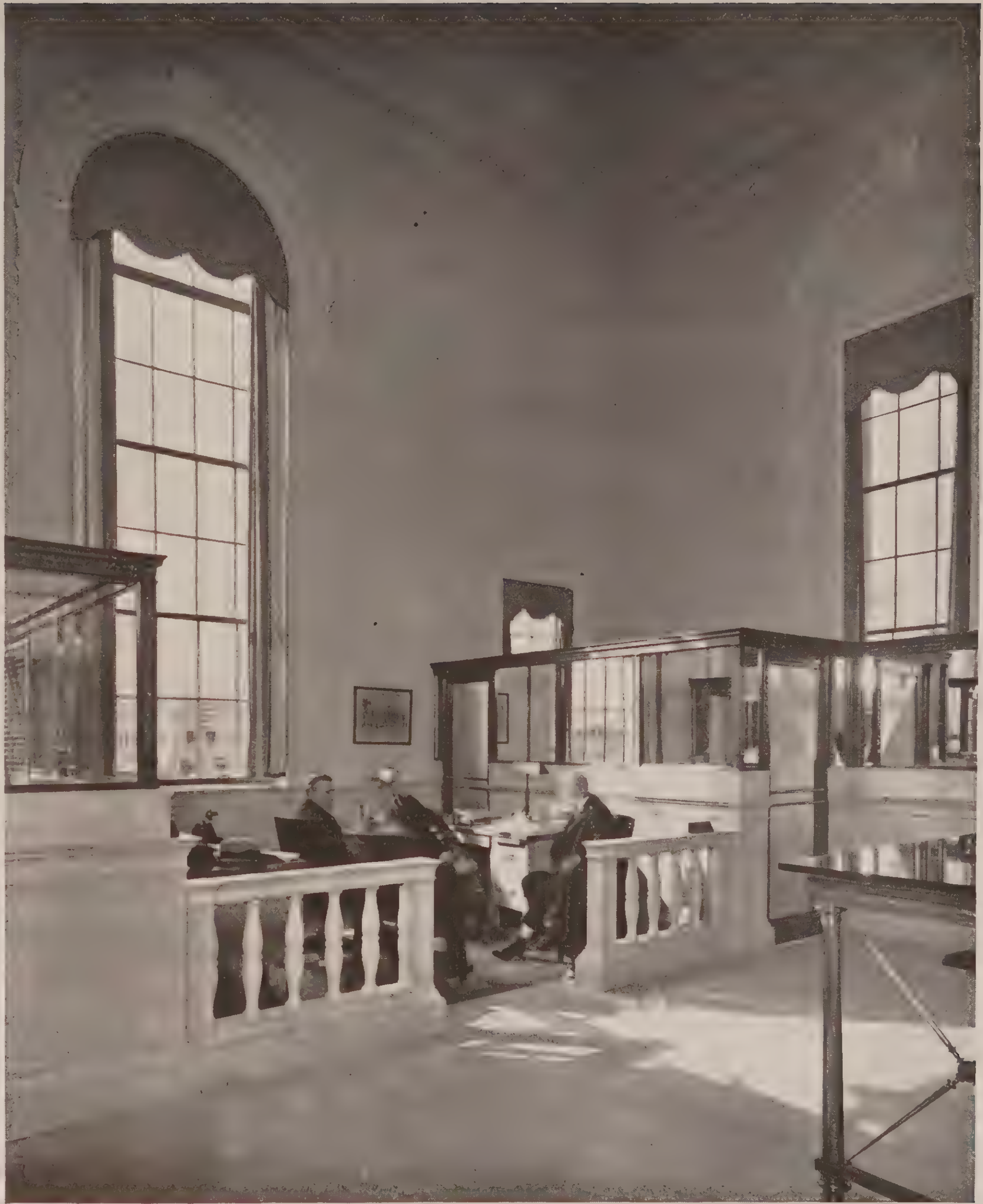
FIRST FLOOR PLAN

SUFFERN NATIONAL BANK, SUFFERN, N. Y.

ALFRED HOPKINS, ARCHITECT



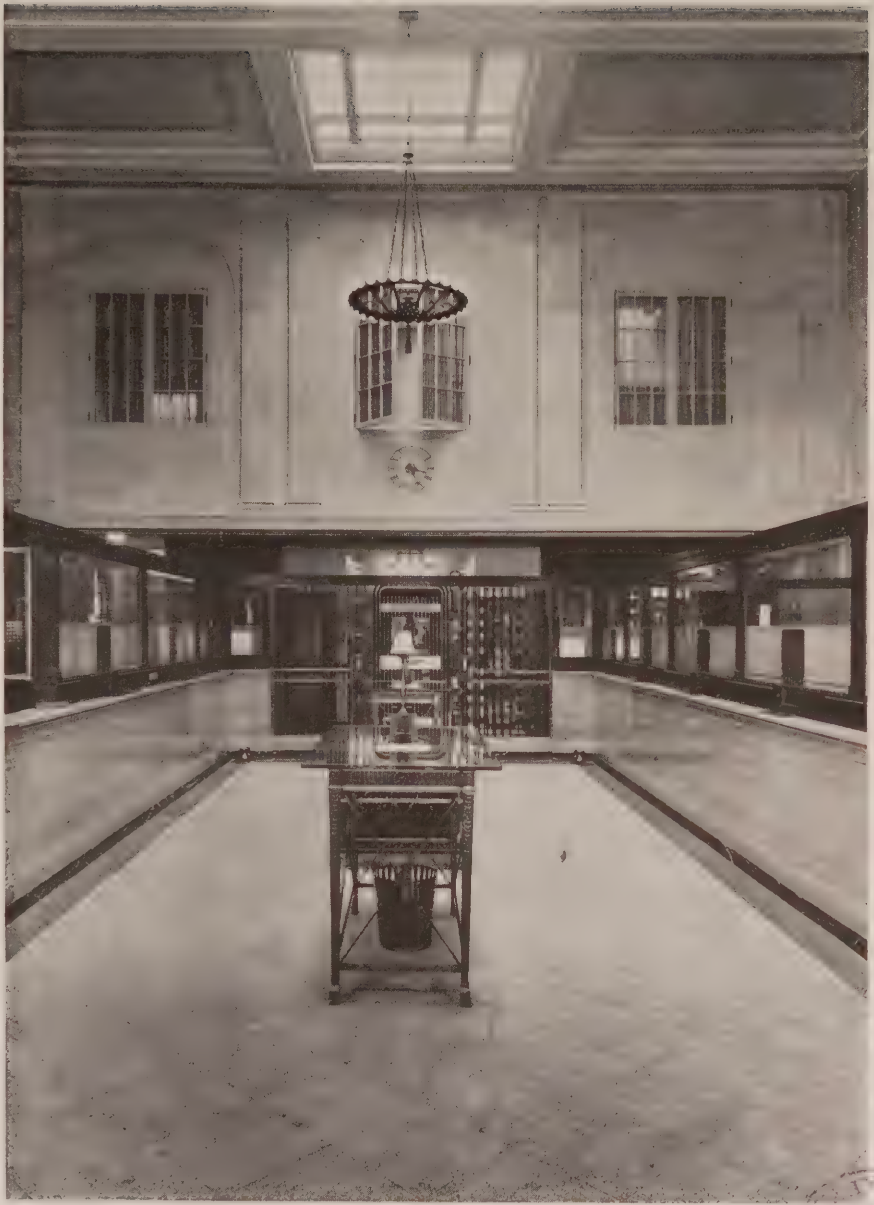
Photos by John Wallace Gillies DETAIL OF PORTICO



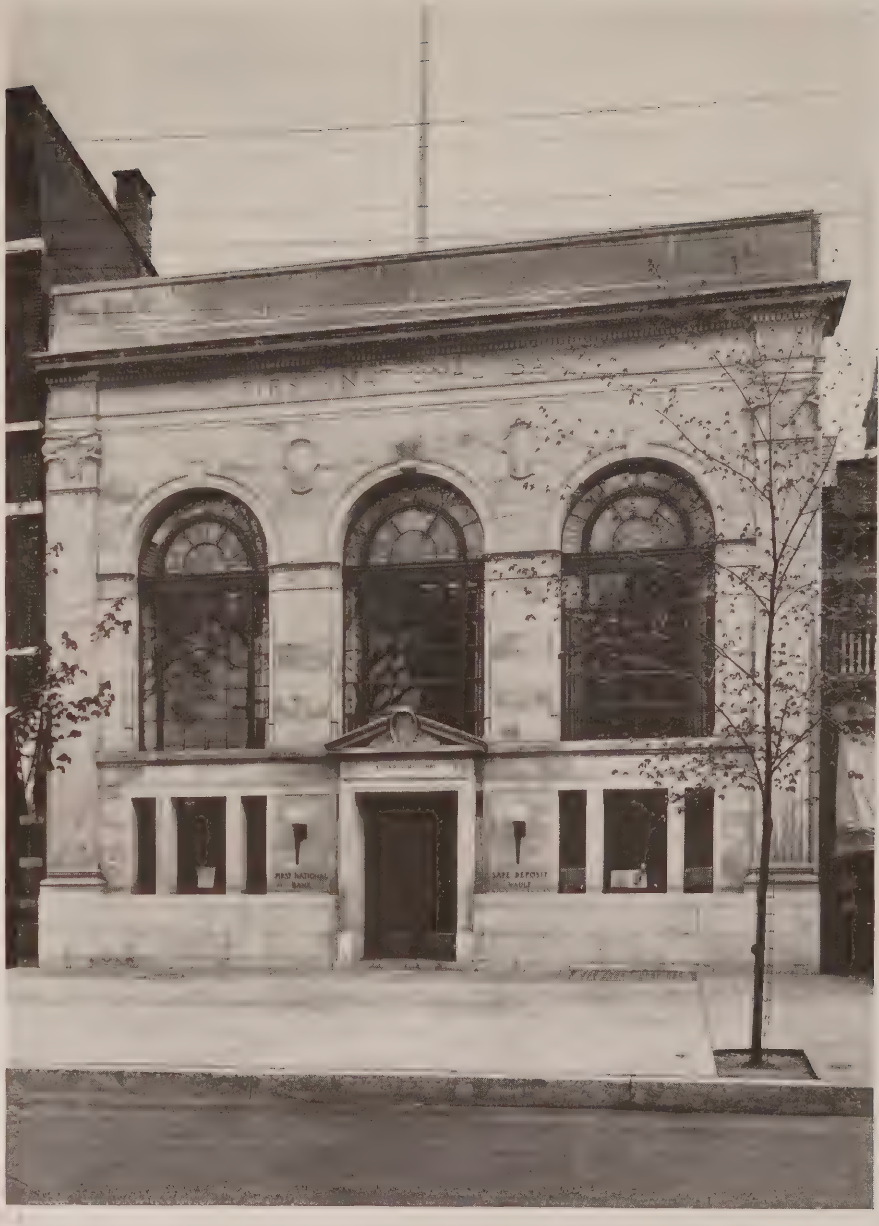
OFFICERS' SPACE

SUFFERN NATIONAL BANK, SUFFERN, N. Y.

ALFRED HOPKINS, ARCHITECT



PUBLIC SPACE



FRONT FACADE

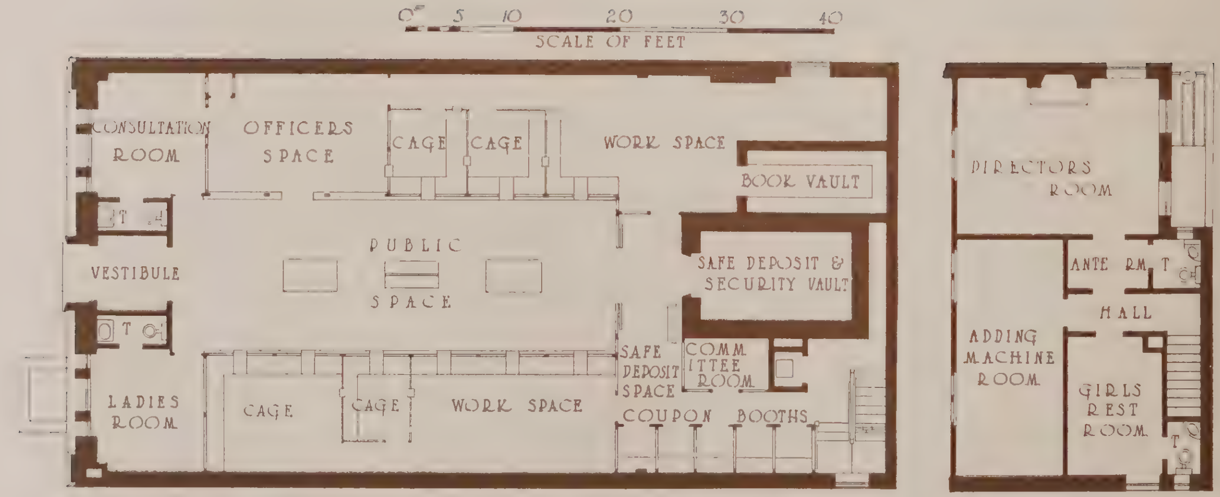
FIRST NATIONAL BANK OF WALLINGFORD, WALLINGFORD

HOLMES & WINSLOW, ARCHITECTS

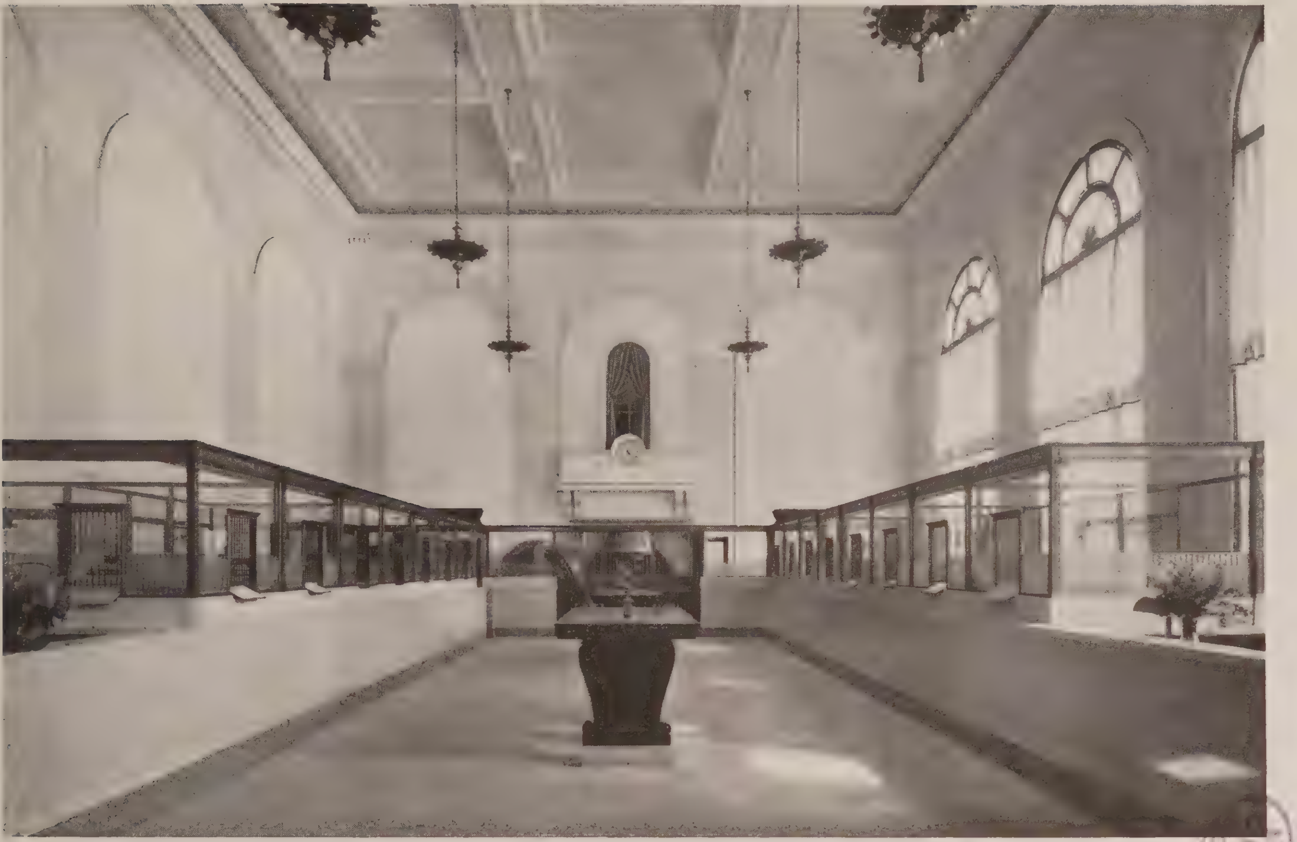
FIRST NATIONAL BANK
WALLINGFORD, CONN.

Illustration on Plate 81

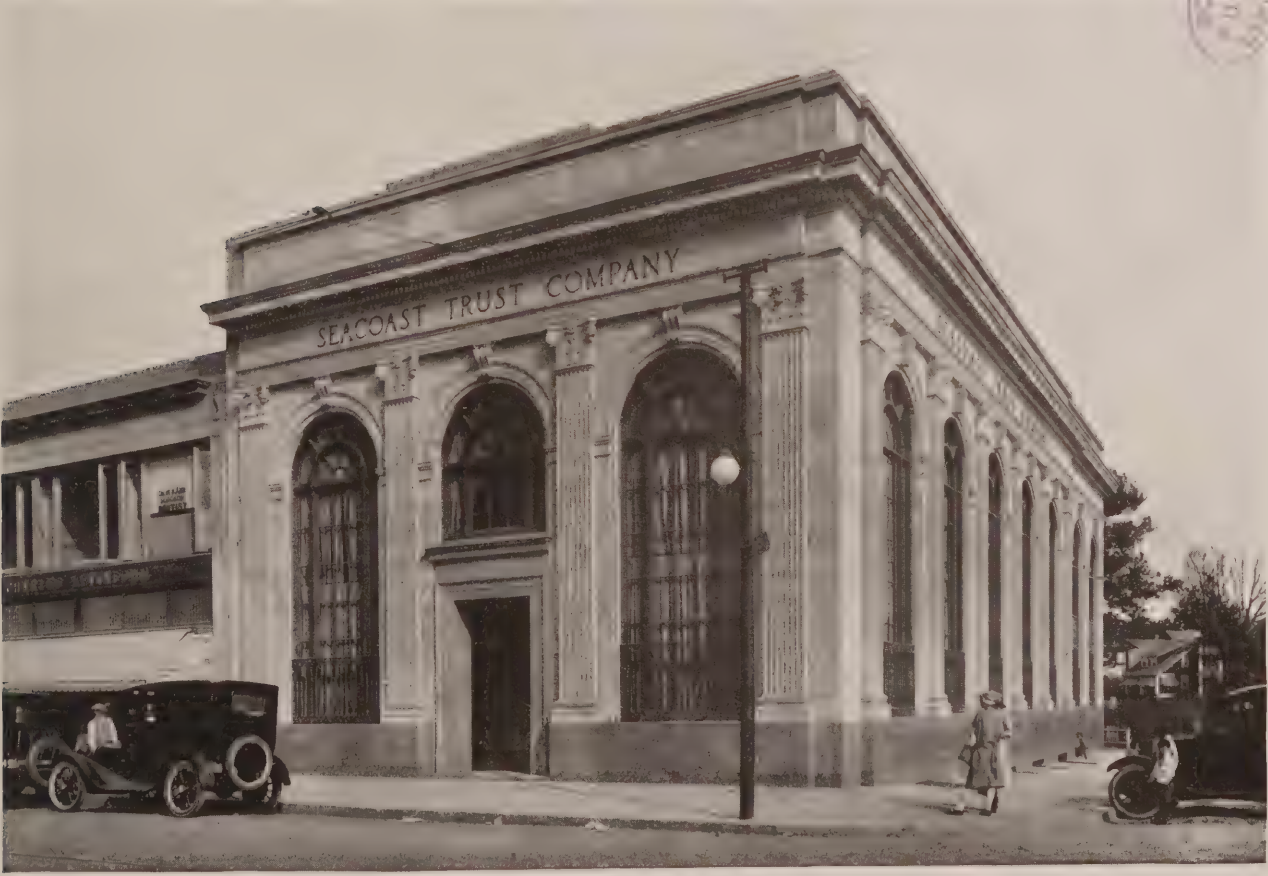
Type of construction. Fireproof
Exterior materials. Limestone
Interior materials. Marble, wood and imitation stone
Windows. Steel sash
Special department provided for safe deposit department
Type of lighting. Direct
Heating. Vapor vacuum (steam)
Date of general contract. February 1922
Total building cost. $77,538
Cubic foot cost. 62 cts.



FIRST AND MEZZANINE FLOOR PLANS



BANKING ROOM



GENERAL VIEW OF EXTERIOR

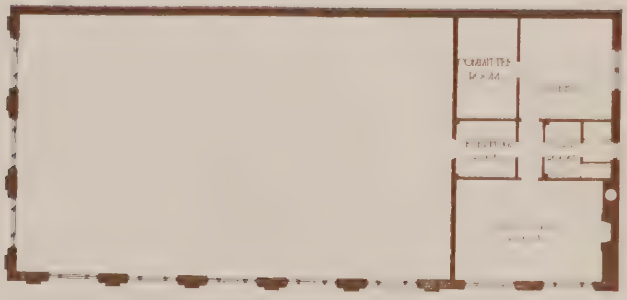
SEACOAST TRUST COMPANY, ASBURY PARK, N. J.

THOMAS M. JAMES, ARCHITECT

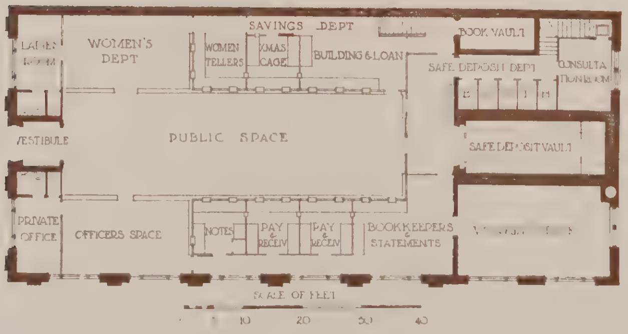
SEACOAST TRUST COMPANY
ASBURY PARK, N. J.

Illustration on Plate 82

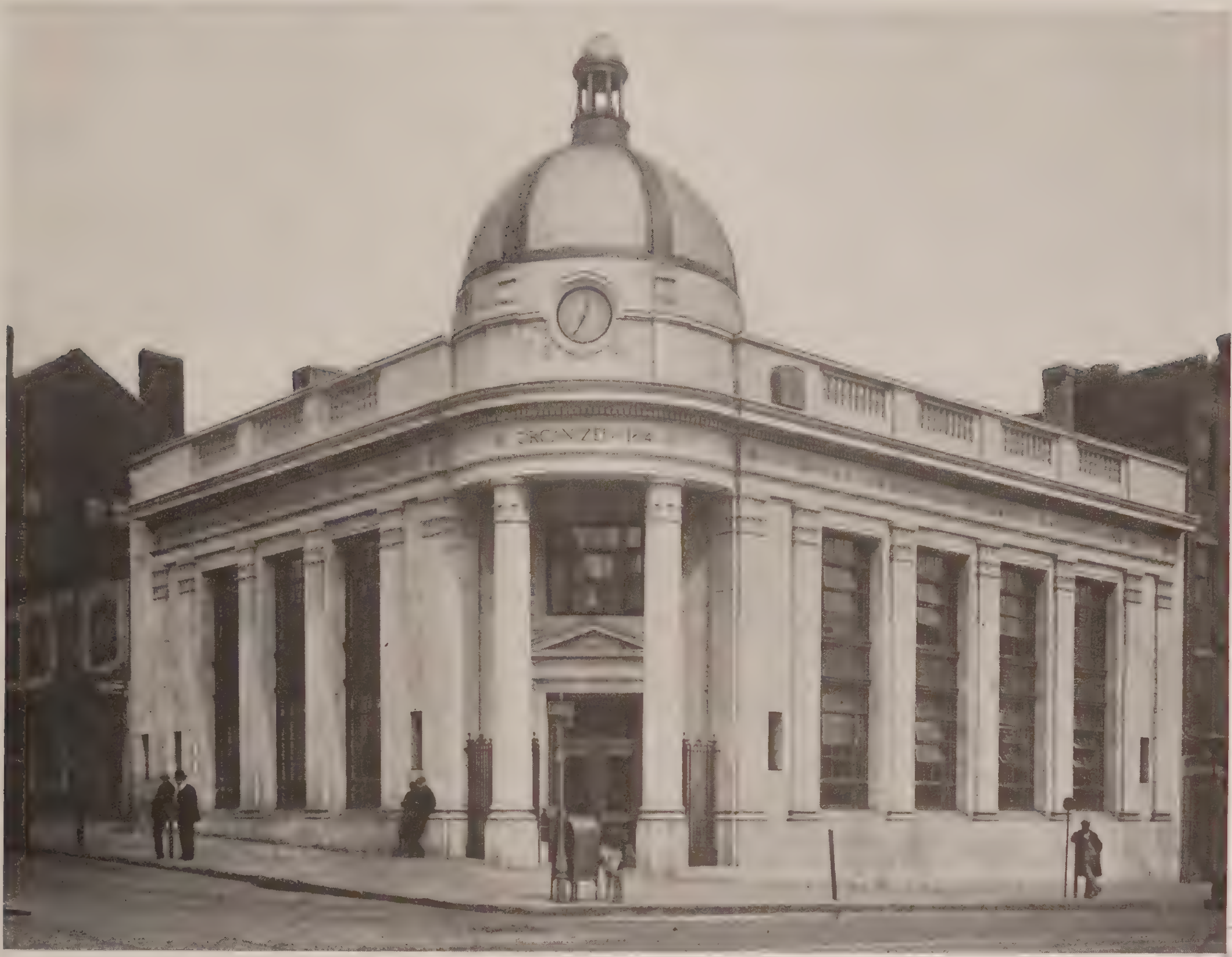
Type of construction. Fireproof
Exterior materials. Granite and stone
Interior materials. Marble, bronze, plaster and mahogany
Windows. Wood
Counter screens. Bronze and marble
Vault and safe deposit provision. Combined on first floor
Type of lighting. Direct
Heating. Vapor
Date of general contract. July, 1921
Total building cost. $180,000
Cubic foot cost. 82 cts.



MEZZANINE FLOOR PLAN

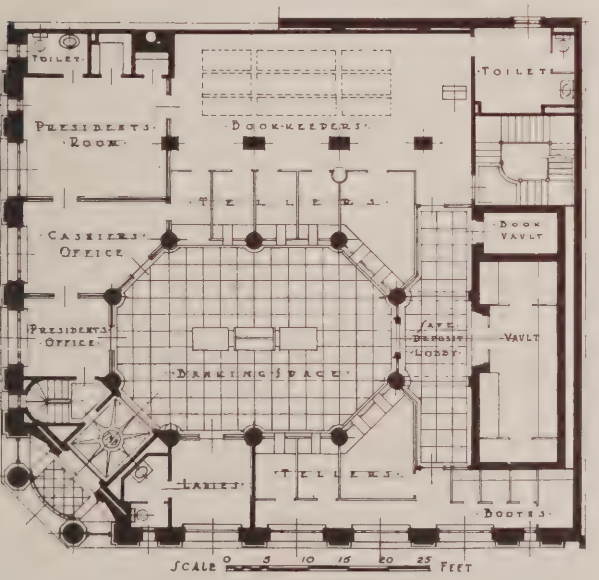


FIRST FLOOR PLAN

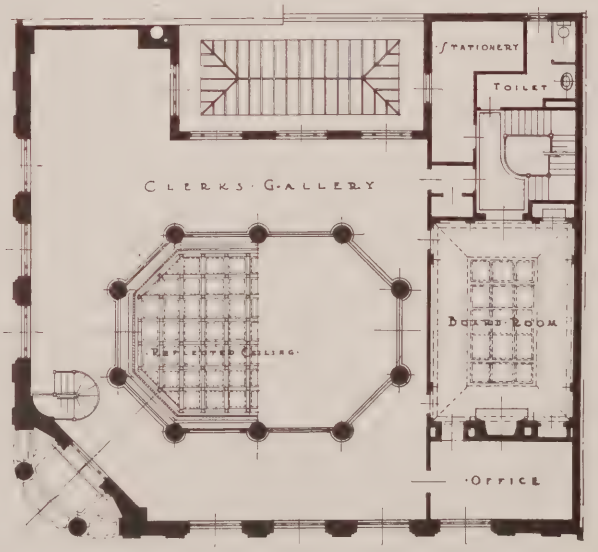


GENERAL VIEW OF EXTERIOR

Type of construction, Fireproof; Exterior materials, White limestone; Interior materials, Italian marble, mahogany; Windows, Bronze sash; Counter screens, Bronze and marble; Special departments provided for, Trust department; Type of lighting, Indirect; Heating, Vacuum vapor; Date of general contract, November, 1921; Total building cost, $200,000; Cubic foot cost, 85 cts.



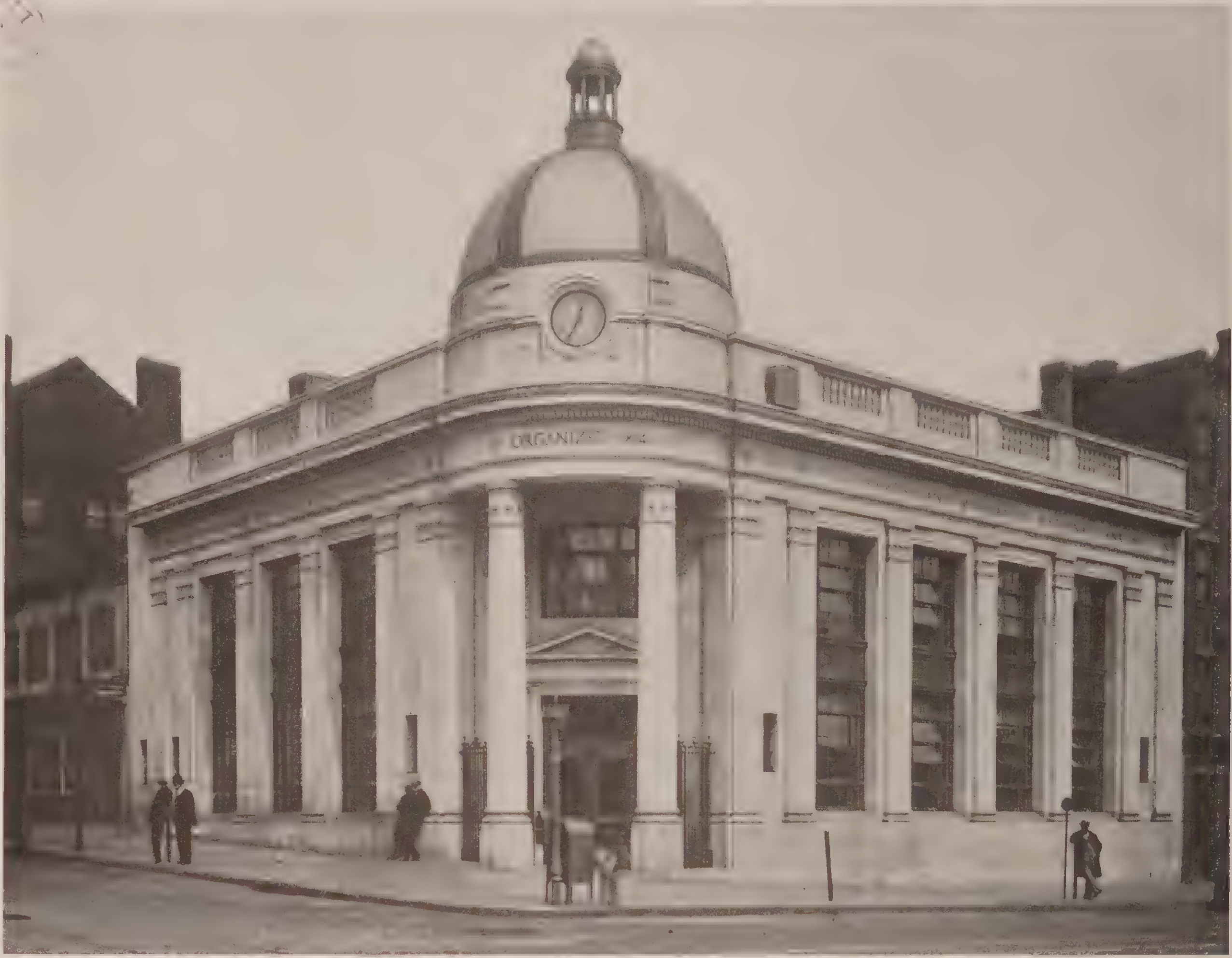
FIRST FLOOR PLAN



SECOND FLOOR PLAN

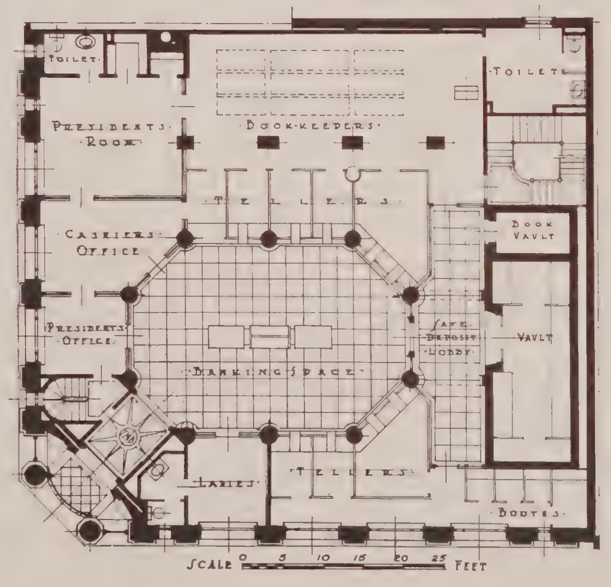
FARMERS AND MECHANICS NATIONAL BANK, GEORGETOWN, D. C.

MARSH & PETER, ARCHITECTS

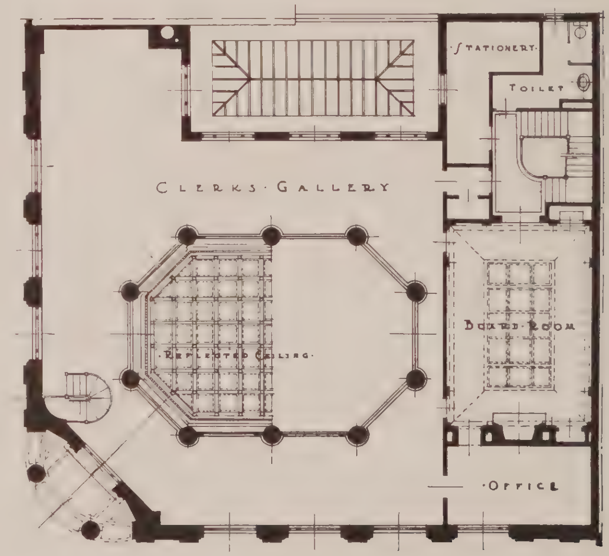


GENERAL VIEW OF EXTERIOR

Type of construction, Fireproof; Exterior materials, White limestone; Interior materials, Italian marble, mahogany; Windows, Bronze sash; Counter screens, Bronze and marble; Special departments provided for, Trust department; Type of lighting, Indirect; Heating, Vacuum vapor; Date of general contract, November, 1921; Total building cost, $200,000; Cubic foot cost, 85 cts.



FIRST FLOOR PLAN



SECOND FLOOR PLAN

FARMERS AND MECHANICS NATIONAL BANK, GEORGETOWN, D. C.

MARSH & PETER, ARCHITECTS

The Lighting of Banks

By A. L. POWELL, *Illuminating Engineer*

A THOROUGHLY satisfactory building really depends on the preliminary planning of the lighting simultaneously with that of the structural elements, and as banks are a type of public building, elaborate in structure with special lighting requirements, the best results are obtained only when this feature is carefully considered beforehand.

It is fairly safe to say that there is no phase of building design or equipment which has undergone and is experiencing as rapid changes as lighting. The architect has an infinite number of details to keep in mind when planning and supervising the construction of a building, but all too often a structure such as a bank is planned and even actually built before the question of lighting is taken up. When the illuminating engineer comes to the work he often finds it impossible to install the type of lighting best suited, due to inadequate provisions as to space, wiring capacity and the like. For example, adequate space should be available for lamps and reflectors above skylights, where such lighting is to be employed. Flexible control and a sufficient number of circuits to take care of future demands should be provided for. Convenient outlets at frequent intervals to meet particular conditions are necessary.

The lighting system in the bank should be such as to impress the patrons with the dignity of the institution. The idea that the building is merely a cold storage place for currency should be eliminated by making the interior comfortable and inviting. The first feature can be secured through the selection of the proper types of fixtures or lamps. They should in general be massive and substantial without being unduly ornate. The ordinary commercial type of equipment is quite unsuited to the high class financial institution. The bank can be made attractive and comfortable by providing an adequate intensity of illumination and by the elimination of glaring, brilliant and annoying light sources. In other words, the lighting must take into account quality and quantity.

There is no question that natural light or daylight is generally satisfactory as a means of illumination and should always be provided where possible. On the other hand, there have been numerous cases where improperly placed or poorly designed windows and skylights have produced glaring, annoying conditions. Three principal means of accomplishing the desired results are: exterior windows, windows in light shafts or wells, and skylights. The illumination from exterior windows falls off very rapidly toward the center of the room, and the variation in intensity with any such system is much greater than ever prevails with a well designed artificial lighting system. The ratio of room width to ceiling height is a governing factor in determining whether this form of lighting is acceptable. Prism glass, of course, has a field in modifying the distri-

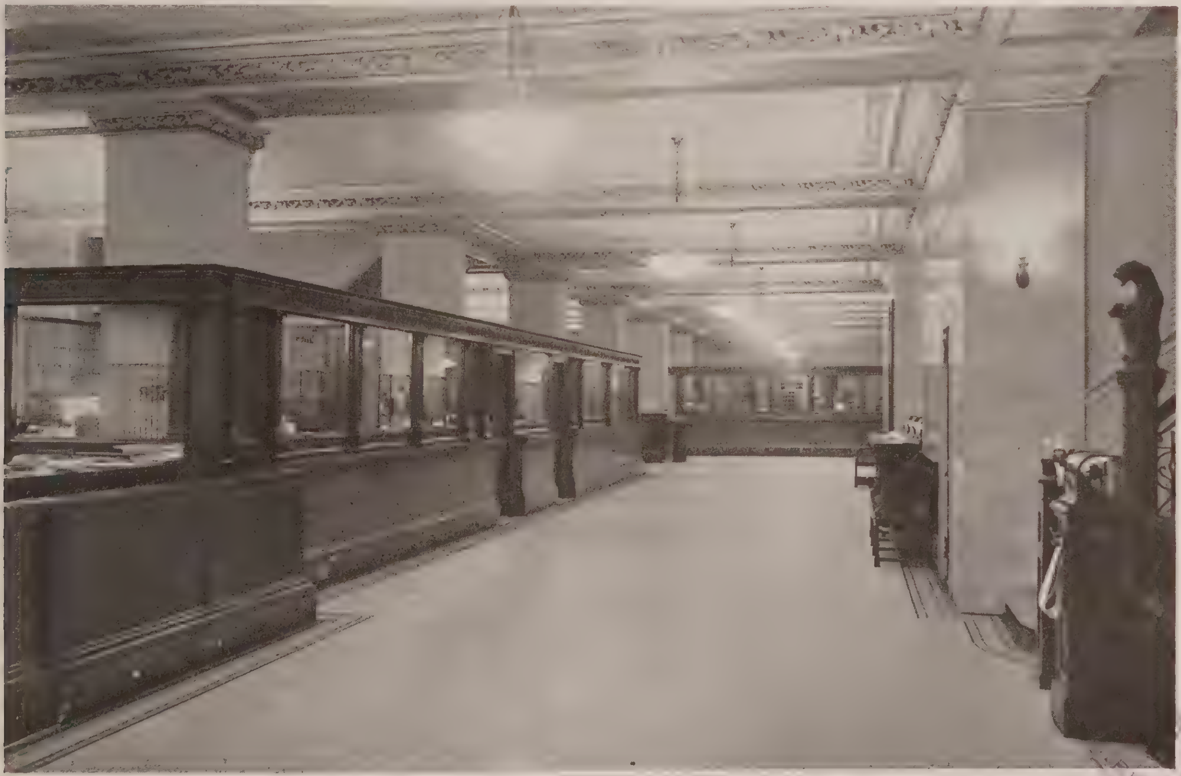


Fig. 1. Night view of a well lighted public space in a bank; 300-watt lamps in semi-indirect bowls on centers 18 x 32 furnish uniform 5-foot candle illumination

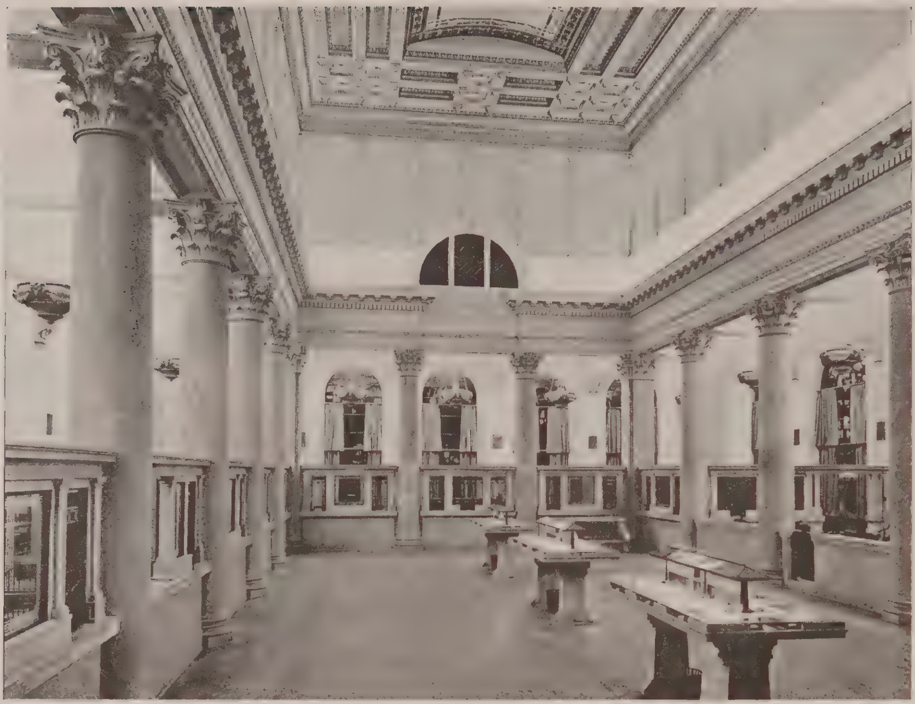


Fig. 2. Banking room of monumental character with cove lighting in public space and indirect pendants in working spaces. Check desk lamps provided

bution of daylight, and is of service in such cases.* In general, a one-story banking room of average dimensions will not have sufficient light in the center of the room for close work when dependence is placed on side windows alone. Extending the windows as close as possible to the ceiling assists in obtaining a desirable distribution. Corner banking rooms, at least two stories in height, may sometimes be well lighted from side windows.

Provision should be made for controlling daylight from windows by means of shades or patent blinds. For the best results, shades should be translucent rather than opaque, thus when drawn providing a lower intensity of diffused light rather than producing a sharp shadow. Double rollers, pulling up and down, located midway of the height, will permit a more comfortable control of light. Where structural conditions permit, skylights provide a means of securing good illumination in the portion of the room not well served by side windows. Where skylights are installed they can also be so equipped as to become the principal sources of artificial light. The choice of the glass for the ceiling is a matter of considerable importance. It should be efficient, or, in other words, transmit as much light as possible, and should be of such a character that there is little or no "spotting" effect from the light sources above it. To eliminate the spotting effect the glass must have more or less diffusion. The less diffusing it is, the closer together the units must be placed. Greater diffusion, on the other hand, generally means a higher absorption. There are on the market a number of types of figured or rippled crystal glass which have a fairly high transmission and eliminate the spotting by refraction rather than by diffusion. Some of these are especially well suited for skylight work.* If it is desired to control the distribution of light through the ceiling, as for example, by directing light against the walls with reflectors set at an angle above the ceiling panes, then some form of roughened or rippled crystal glass is necessary. If merely diffusion with maximum intensity downward is wanted, then opal glass will give this effect regardless of the type of equipment above the glass.

Where opal glass is used the light sources themselves furnish light to the ceiling, and the glass ceiling in turn lights the room. But unfortunately the opal, in becoming a secondary source, illuminates in all directions, and it is necessary to add to the loss of light between lamps and the glass ceiling the loss due to the glass lighting the attic as well as the room below; hence the resultant efficiency is very low. With crystal glass the ceiling itself is not a secondary lighting source; it serves to scatter the light which is being transmitted, and there is very little returned light. In the matter of appearance there is a certain amount of "life" to a ceiling of crystal glass that is not obtainable with opal.

To control the amount of daylight which enters the room the upper skylight may be made of glass of relatively high absorption, or shades or louvers can be used to cut down the intensity. Controlled daylight should not be obtained through the lower skylight, for we must have a high transmission of the artificial light. In some cases the upper skylight is tinted a light amber and used as a filter to bring the daylight to the color value of the artificial light.

Even though excellent natural lighting be provided, there are many days when the intensity is too low for efficient vision; there are parts of the building which are not reached by the daylight, and finally much of a bank's work must be done after nightfall. An adequate system of artificial illumination is therefore essential, and upon its success depends the comfort of patrons and employes.

Within the past few years there have been remarkable advances in designing the light source itself as well as in reflecting and diffusing accessories. The modern lamps give about six times the light for the same power as was obtained from the lamp

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*A complete study of this subject will be found in the *Transactions of the Illuminating Engineering Society*, Vol. 9, 1914, p. 643.

*A full discussion of this topic will be found in the *Transactions of the Illuminating Engineering Society*, Vol. 9, 1914, p. 1011.

of 15 years ago. The lamp itself is by no means a complete lighting unit. It produces the raw light which must be modified, redirected and diffused before it is thoroughly satisfactory for illumination, and it needs reflectors, globes, shades or other accessories to produce these results. Three general systems of illumination have been developed, all of which are applicable to an interior such as a bank. These are known as direct (where most of the light is sent downward to the work), semi-indirect (where most of the light is sent to the ceiling and then reflected downward, some being transmitted through the glassware of the fixture), and totally indirect (where all the light is first directed upward). The indirect or semi-indirect systems are not recommended for use under dark ceilings or skylights.

Public Spaces. These areas should naturally receive the most attention from the decorative standpoint, but on the other hand this quality should not be over-stressed. The main banking space should be equipped with general lighting of an intensity of from 4- to 6-foot candles.

Individual types of equipment vary considerably as to efficiency, and the color of surroundings has an appreciable effect on the resultant intensity. In general, the value considered desirable can be obtained with light colored surroundings by installing lamps of such wattage as to give these specific consumptions: diffused direct light, 1 to 1½ watts per square foot; semi-indirect light, 1¼ to 1¾ watts per square foot; totally indirect light, 1½ to 2 watts per square foot. A pleasing yet simple and inexpensive installation of semi-indirect fixtures, consisting of opalescent glass bowls and neat, three-chain hangers, is to be seen in use in Fig. 1. Here it will be noted that the working area, as is usually the case, adjoins the public space and with such a system as pictured larger lamps can be installed in the units over the working portions to provide the high intensity needed here for bookkeeping and clerical work.

As another example of the wide latitude now at our disposal in planning artificial illumination we might examine Fig. 3. A neat trough above the cage grille conceals inverted, mirrored glass reflectors and lamps furnishing indirect lighting. 75-watt lamps in mirrored glass reflectors are spaced on centers 3 x 5 feet above the glass skylight and furnish enough direct light to render the glass somewhat more luminous than the surrounding ceiling. Lighting from above the skylight should usually be supplemented by diffuse direct lighting or indirect lighting as shown here, otherwise the architectural details around the skylight and on the ceiling are lost and rather severe contrasts between the glass area and the ceiling prevail. If the general lighting provided is not deemed adequate for the patrons' desks, they should be equipped with local units producing an intensity of from 15- to 20-foot candles. Desk lamps should be carefully chosen and so placed that direct and reflected glare is minimized.

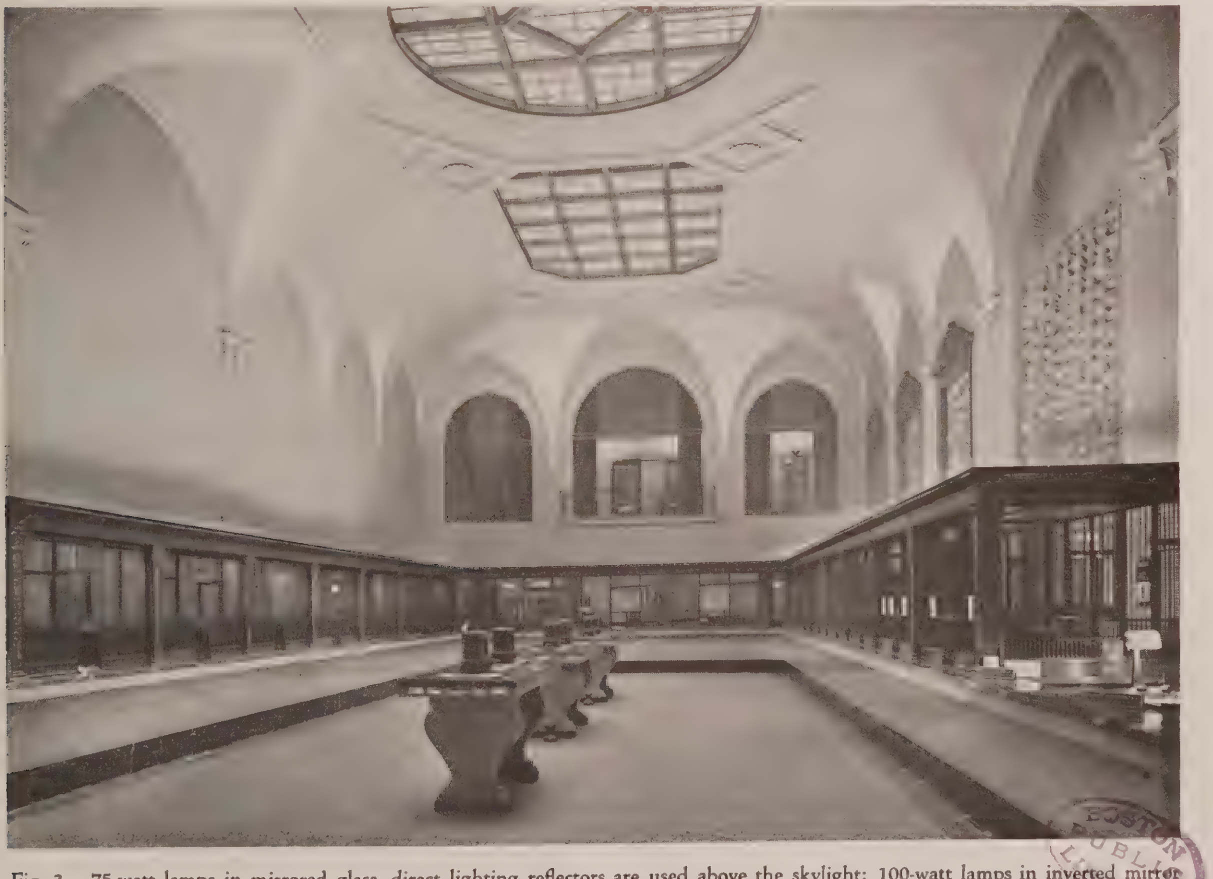

Fig. 3. 75-watt lamps in mirrored glass, direct lighting reflectors are used above the skylight; 100-watt lamps in inverted mirror reflectors above the cages provide indirect illumination and make the ceiling luminous

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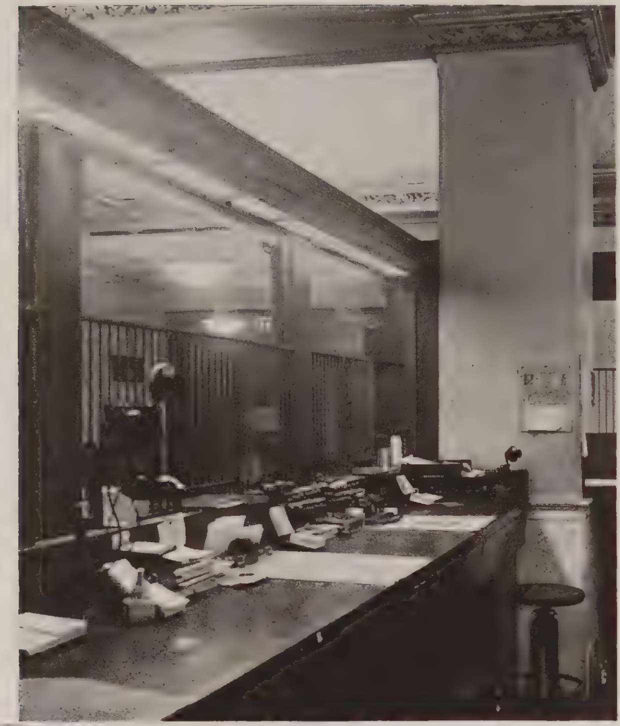


Fig. 4. Typical cage grille continuous fixture using 25-watt lamps in small mirrored reflectors on 14-inch centers

Working Areas. With the high efficiency of the present-day illuminants, the old forms of local or drop lighting are being gradually eliminated, and the multiplicity of unsightly cords and tin shades, which formerly occupied the space behind the cages, is becoming a thing of the past.

The general system of lighting can often be supplemented by cage grille fixtures, of the type shown in Fig. 4, to raise the intensity at the various wickets to something of over 10-foot candle power. This form of lighting will assist in detecting fraud and speed up the work. The best types of grille fixtures employ suitable mirrored glass reflectors and relatively small lamps, 10- or 15-watt, on 8-inch centers. The distribution of light should be such as to prevent glare and give an even illumination over the desk tops. A diffusing glass plate over the opening prevents annoying reflections.

Directors' Rooms. Board and meeting rooms have the same general requirements for lighting as offices, although a moderate intensity, of from 3- to 5-foot candles, is sufficient. There is comparatively little close work carried on here. In many instances these rooms are finished in dark woodwork, which makes the lighting problem quite complex.

It is almost impossible to comfortably illuminate to a high level a room finished throughout with dark woodwork. There will always be a rather severe contrast in brightness. Light colored surroundings assist materially in diffusing the light, reducing shadows and eliminating contrasts. In the room with dark woodwork bracket units should always be avoided. Enclosing, diffusing globes with suitable, clear lamps, hung high, out of the ordinary angle of view, are probably the best means of illumination. The character and design of the supporting fixture will depend on the general elaborateness of the room decoration.

Vaults. The vaults are used primarily for the storage of money and valuable documents, and little actual work is carried on here. A lower intensity of illumination (3- to 4-foot candles) will be adequate. The boxes extend from the floor to the very top of the room, and a flood of light in all directions is necessary. In most instances it is inadvisable to pierce the armor plate of the safe in order to furnish electrical current for lighting purposes. A convenient arrangement to overcome this difficulty is to locate a receptacle *outside* of the vault, connected to the power supply, and another *inside* of the vault, feeding the lighting circuit. When the steel door is opened a flexible cable with a plug at each end connects the two receptacles. With such an arrangement as this a circuit-breaker or small fuse should be installed in the individual circuit, for occasionally through oversight the steel door is accidentally closed on the cable, thus short-circuiting the line.

Coupon Booths. The small rooms, resembling telephone booths, used by the patrons of the bank for examining securities, clipping coupons, etc., should be lighted by desk lamps or bracket fixtures placed above the tables. No other general illumination is necessary, save that it is most desirable to provide 10-watt lamps directly *beneath* the tables. Many times when sorting certificates or coupons one is dropped, and the search for this on the dark floor is most annoying. The device suggested will be a real comfort in such an event.

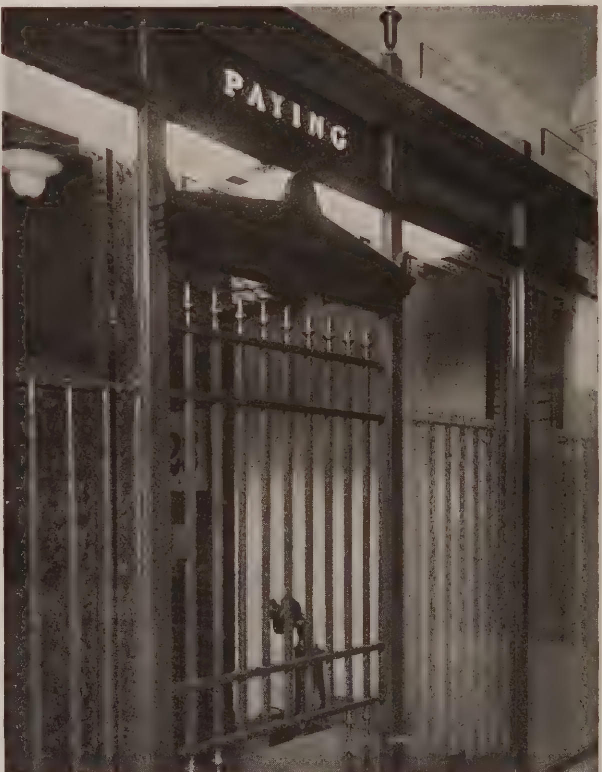


Fig. 5. Neat, luminous signs above the wickets are convenient and readily combined with screen design

Heating and Ventilating of Bank Buildings

By ARTHUR K. OHMES

of Tenney & Ohmes, Consulting Engineers, New York

THE requirements to be met in the design of an economical and satisfactory heating and ventilating equipment for a large bank building may under certain conditions be quite difficult, and then again be quite simple. This statement will be readily understood when all factors pertaining to the design are carefully analyzed. The small country or branch bank's heating plant is very simple; artificial ventilation is practically unknown, hence these bank buildings will not be discussed.

Business considerations demand that the building be located in the trade or financial center of the city. This means that the building site is almost invariably selected on streets where there is much noise from various kinds of traffic. Since "quietness" appears to be one of the prime requirements in successful banking, open windows are frequently objectionable, even if at certain times atmospheric conditions permit them to be opened.

While there is a certain "standardization" in school, hospital and office building construction, no "standardization" has been attempted in larger bank buildings. Every such building requires therefore its own careful analysis as to the heating and ventilating requirements to be met. It is obvious that entirely different problems must be met in chilly Maine and warm and sunny Florida. It is also well to take into account the fact that almost all banks are continually expanding, not only in size, but also in new departments, and that additional facilities for doing business become necessary every few years. Before these facilities are provided the various departments are crowded to the limit, and with it the ventilating requirements are increased. Particular attention must be given to the present tendency of having some of the important departments in underground spaces, creating a most difficult ventilating problem.

Banking Spaces above Ground

The medium sized bank, employing about 50 people, seldom requires an extensive ventilating system unless it has very few windows which cannot be opened on account of dust, traffic noise, automobile engine odors, etc., or because it is located in a very cold climate where windows must be kept closed for months at a time to avoid intolerable and even dangerous drafts.

A few years ago a bank and office building was erected in a fair sized city in Kentucky. The ground floor contained the banking room, and the owners directed the provision of good air supply and exhaust ventilation, and the plans were worked out accordingly. When bids were taken the cost of the building was found to be in excess of the estimated cost, and it was decided to reduce the expense all along the line, and the fairly expensive equipment was of course omitted. Only exhaust ventilation was provided. Large radiators as shown in detail on Fig. 1 were provided to permit a slight opening of windows even in the coldest weather. The bank is doing a successful business despite the omission of the expensive ventilation apparatus worked out in the original plans. For all other details see "Building No. 1" in "Schedule No. 1."

Now contrast this experience with another banking room in New York. This bank had a very complete ventilating system as detailed under "Build-

BUILD'G Nº.	DIMENSIONS OF BANKING ROOM			IMPORTANT DETAILS OF BANKING ROOM				FIGURED QUANTITIES OF ARTIFICIAL VENTILATION				ASSUMED MAXIMUM APPROXIMATE NUMBER OF PERSONS IN ROOM	RATIO PER PERSON IN BANKING ROOM FOR ASSUMED MAXIMUM NUMBER OF PERSONS.					
	WIDTH	LENGTH	HEIGHT	FLOOR AREA SQ FT.	CUBIC CONTENTS CU.FT.	WINDOW AREA SQ FT.	SKYLIGHT AREA SQ FT	TOTAL AIR SUPPLY PER-HOUR CU.FT.	TOTAL EXHAUST PER HOUR CU.FT.	AIR SUPPLY CHANGES PER HOUR	EXHAUST CHANGES PER HOUR		FLOOR AREA SQ FT	CUBIC CONTENTS CU.FT.	WINDOW AREA SQ FT.	SKYLIGHT AREA SQ.FT.	ARTIFICIAL AIR SUPPLY PER HOUR CU FT	ARTIFICIAL EXHAUST PER HOUR CU FT
				MEDIUM SIZED BANKING ROOMS														
1	45	44	98	1970	56,000	720	—	—	11,200	—	2.0	50	40.0	1,120.0	14.4	—	—	2,250
2	34	93	16	3150	50,000	330	750	250,000	200,000	5.0	4.0	60	52.5	830.0	5.5	12.5	4,150	3,330
3	32	38	20	1,220	24,400	256	—	—	—	—	—	25	49.0	970.0	10.1	—	—	—
4	43	75	38	3,200	12,300	1,340	—	36,900	246,000	3.0	2.0	75	43.0	1,640.0	18.0		4,900	3,550
				LARGE BANKING ROOMS														
5	130	185	55	24,200	1,330,000	2,900	1,600	4,500,000	3,000,000	3.4	2.25	500	48.0	2,800.0	5.8	3.2	9,000	6,000
6	85	105	85	9,000	770,000	2,900	1,600	1,920,000	1,500,000	2.5	2.0	250	36.0	3,100.0	11.6	6.4	7,700	6,000
7	81	120	52	9,700	500,000	2,400	—	1,500,000	1,000,000	3.0	2.0	300	32.0	1,660.0	8.0	—	5,000	3,300
8	82	155	48	12,700	610,000	2,100	1,400	1,830,000	1,220,000	3.0	2.0	350	36.5	1,740.0	6.0	4.0	5,200	3,500

Schedule No. 1

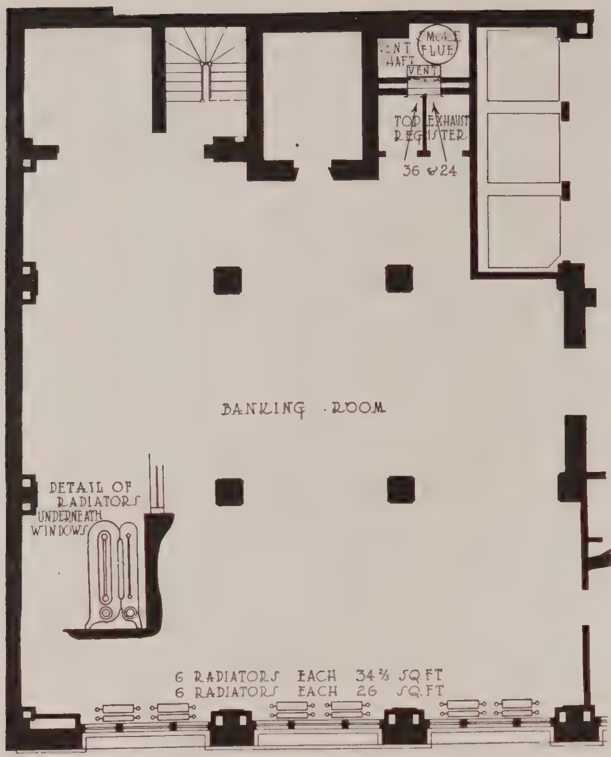

SMOKE FLUE
VENT SHAFT
VENT
TOP EXHAUST REGISTER
36 & 24
BANKING ROOM
DETAIL OF RADIATORS UNDERNEATH WINDOWS
6 RADIATORS EACH 34⅔ SQ.FT
6 RADIATORS EACH 26 SQ.FT

Fig. 1. Floor Plan and Details of Simple Direct Heating and Exhaust Ventilation

ing No. 2" in "Schedule No. 1." Windows were stationary because it was felt they could not be opened on account of street noise, dust, etc. Soon after the opening of the bank an air washer had to be installed. Later on when the banking room was enlarged a still more complete system of air supply was decided upon and installed in connection with the ventilating system for the addition. Another banking room was very simply treated and detailed under "Building No. 3" in "Schedule No. 1." This bank building is located in Tennessee, and the large room has no ventilation, but an interior bookkeeper's room has supply and exhaust ventilation and the working mezzanine only exhaust ventilation. A banking building, on the other hand, with very much the same general outlines, located along the Canadian border, where windows cannot be opened in the winter months, was provided as detailed under "Building No. 4" in "Schedule No. 1" with a good air supply and exhaust ventilating system throughout. The owners desired good ventilation for the original building, and now that a new extension is to be built, a similar, complete apparatus was decided upon.

When we now consider banks whose resources run into the millions, with hundreds of employes, we find usually a well defined desire for artificial ventilation. Some details of larger banks, so treated, are given under "Buildings Nos. 5, 6, 7 and 8" in "Schedule No. 1." The air supply and exhaust ventilation for banking rooms Nos. 7 and 8 is reversible; that is, by means of turning a damper the air can either be introduced near the ceiling and exhausted from near the floor or introduced at the bottom and exhausted from the top of the room. It should, however, be said that care must be taken in arranging bottom registers, otherwise objectionable drafts will be felt.

The main features of a reversible ventilating system are shown in Fig. 2. It will be noted that the air supply is introduced at the top and exhausted at the bottom when the damper is in a vertical position. To reverse the ventilation the damper is turned into a horizontal position, and if the air currents are traced as shown in dotted lines it will be seen that air is now introduced at the bottom and the air is exhausted at the top.

But even in large banking rooms the climatic conditions must be considered. Thus, for instance, for a bank in a large city of central Canada, where double and air-tight windows must be used, a very complete air supply and exhaust system must not only be installed for ventilation, but it may be required to minimize in-drafts and to assist the heating in temperatures frequently of 30° below zero. Again, it is questionable that the same banking room would require more than a very simple exhaust ventilating system with ample radiators in Florida, where the temperature is seldom lower than 30° above zero. Architects always object to unsightly air supply registers, but it is usually possible to arrange them symmetrically on the walls over windows or in a continuous frieze, or still better to hide them altogether in the tops of cornices. Under no conditions should ceiling registers ever be used for air supply, because it is practically never possible to prevent drafts. Experience has shown that air supply introduced through ceiling registers, even if at only a few degrees lower than the room temperature, results usually in drafts, no matter how high the room may be.

If air supply ventilation is to be provided, too much emphasis cannot be laid on the fact that an air inlet must be located where really fresh air can be obtained. It is useless to take air from a dirty back alley or from sidewalk gratings and to rely upon an air-washer to purify the air from contamination such as excessive dust and dirt, automobile

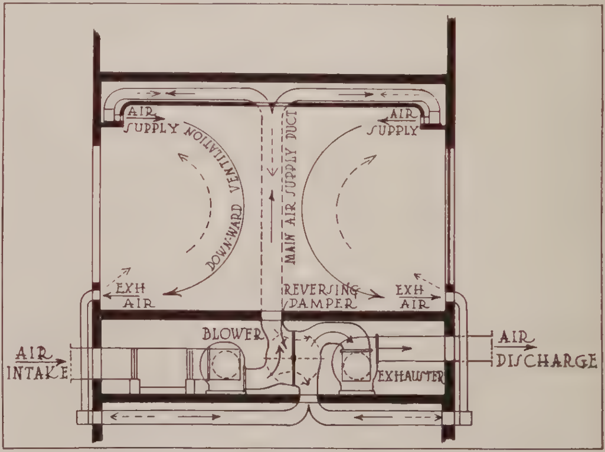


Fig. 2. Reversible Ventilating System. Two Directions Indicated by Full and Dotted Arrows

engine odors, paper, refuse, etc. Roof air inlets are likely to be contaminated by smoke, fuel gases, plumbing vents, foul air, kitchen discharges, etc. The best place for the air inlet in our crowded, busy cities is usually in a large court or, still better, on the shady side of the street some 50 feet above the sidewalk in high buildings, or halfway up the building in case of a low structure.

Heating

Both steam and hot water heating systems have been successfully used in all kinds of climates. Automatic temperature regulation in all larger rooms is still desirable, for it is usually found that in crowded rooms fewer arguments will arise when an automatic device is installed to regulate the temperature instead of letting half a dozen people take a hand at it. Special consideration must be given to the prevention of down-drafts from large windows, walls, ceilings and skylights. Hand in hand with special down-draft planning, however, must go good and tight construction, particularly in cold climates. A simple down-draft prevention plan is indicated in Fig. 3 which is self-explanatory.

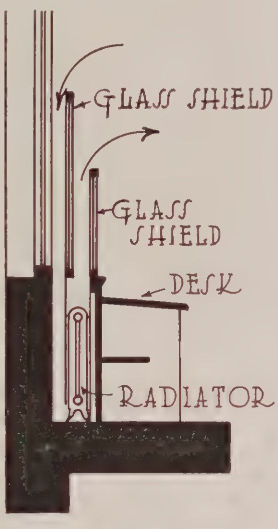


Fig. 3. Down-Draft Prevention Scheme

The entrances must be well protected to prevent objectionable cold in-drafts. This is of particular importance in a high building, if the banking room communicates directly with elevator shafts, stair wells, etc. There is in every building when being heated a so-called neutral zone. Below this zone the pressure within the building is less than the outside pressure, and above this zone the pressure within the building is more than the pressure surrounding the building. These pressure conditions, which are graphically shown in Fig. 4, result in an inward rush of air below the neutral zone and an outward rush of air above the neutral zone.

If a rather extreme case be taken of say a building having 10,000,000 cubic feet contents, we find the air inside the building if at 70° temperature weighs 749.4 tons; a similar amount of air at zero temperature surrounding the building, however, weighs 863.5 tons, the difference being 114.1 tons. The air in the building is being kept from moving upward by the outside walls, windows and ceilings. It is, therefore, of great importance to be extremely generous with the heating surfaces for the entrances. The revolving door is almost unavoidable, and if storm doors and radiators are used they will take care of the severest conditions. Frequently radiators are objectionable, and indirect heat must be used. If so, it is well to provide for entrance heating a separate small fan, operating under high pressure, with steam coils arranged for sectional control.

Heat and Power Supply

Some 25 years ago almost all large bank buildings had their own power plants, utilizing the exhaust steam from power generation for heating. Coal was cheap at that time and electric current high, and it was altogether the most economical proposition. Wherever a bank building can be heated by street steam or from outside sources, it should be done. Most of the large bank buildings in lower New York have used street steam supply for years. If, however, a power plant is to be installed, it should be carefully kept away from all underground working spaces, safe deposit vaults, etc. If this is not done the waste heat will seriously affect these spaces, reducing the efficiency of the workers to such an extent as to dissipate many times the small saving effected by having a power plant.

Working Spaces below Ground

There is at present a decided tendency in many large banks in the great cities to locate workrooms, security transfer departments, bookkeepers, etc., immediately below the ground floor, in other words, in spaces where there are no windows and where all ventilation must be secured by artificial means. Too much emphasis cannot be laid upon the fact that if building conditions require underground working spaces the least the bank can do is to provide the best artificial ventilation that can be procured. Architects should strive to secure as high rooms as possible and to make the problem of the ventilating engineer no more difficult than absolutely necessary.

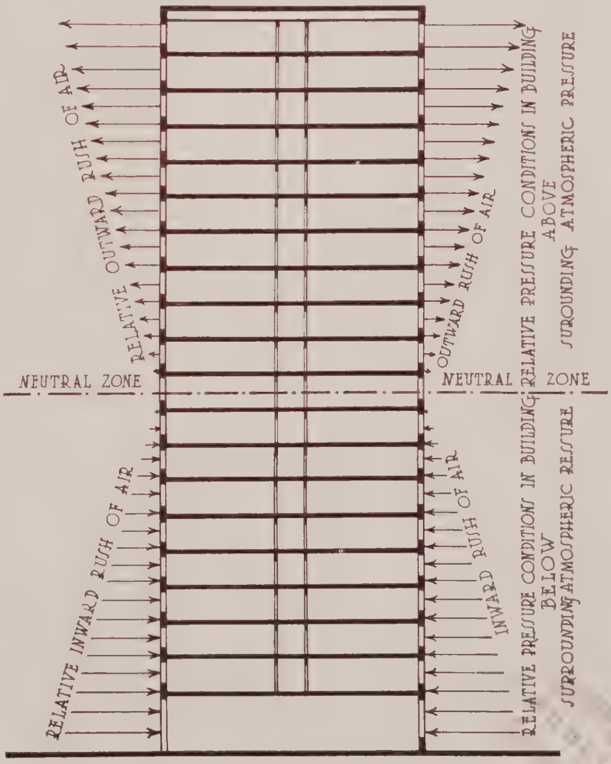

RELATIVE OUTWARD RUSH OF AIR
OUTWARD RUSH OF AIR
RELATIVE PRESSURE CONDITIONS IN BUILDING ABOVE SURROUNDING ATMOSPHERIC PRESSURE
NEUTRAL ZONE
NEUTRAL ZONE
RELATIVE INWARD RUSH OF AIR
INWARD RUSH OF AIR
RELATIVE PRESSURE CONDITIONS IN BUILDING BELOW SURROUNDING ATMOSPHERIC PRESSURE

Fig. 4. Sectional Diagram of Office Building Indicating Different Pressures above and below a Neutral Zone

The number of air changes to be provided will vary with the climatic conditions, because the ventilation is always judged by the temperature conditions maintained.

Generally speaking, it will be found that for a room 11 feet high about ten changes per hour are desirable for cities like New York or Philadelphia. These changes may be reduced 25 per cent for average northern locations, and should be increased at least 25 per cent for southern locations. It is still more important to follow scrupulously the suggestions made heretofore for air inlet locations, and in addition all possibilities of heat increase to air supply in ducts and flues must be avoided.

Safe Deposit Vaults, Etc.

The general remarks made under "underground rooms" as to air changes pertain to vault ventilation, excepting that physical difficulties make vault ventilation somewhat more difficult. A ventilating system for a vault must not interfere with the safety, fire-and waterproofing features of the vault. This requirement means each day a 17-hour interruption in the service of the ventilating system. Over Sundays and holidays the vault may be without any air change for 40 hours or longer. As doors in vaults must be absolutely air-and watertight, the ventilating ducts must be disconnected and no air movement whatever takes place. It is natural that the air in a large vault will be oppressive when it is opened.

The problem is therefore always to bring into the vault a very large amount of air to flush out the smells created by paper money, books and bonds, the latter two producing a particularly disagreeable odor from the glue used in the bindings. Very small vaults should be provided with disc fans so arranged as to discharge air out of the vaults into the surrounding spaces. A very simple and effective ventilating system for a medium sized vault is to locate an air supply register opposite the main door, which will discharge about 1,000 cubic feet of air per minute at about 10-foot velocity per second. This velocity is more than sufficient to drive the fresh air into the vault and out of the emergency door. The exhaust register over the emergency door removes the air as it is driven out of the vault. In larger vaults it becomes necessary to have an air-distributing system inside, this duct being connected by hinged joints over the door.

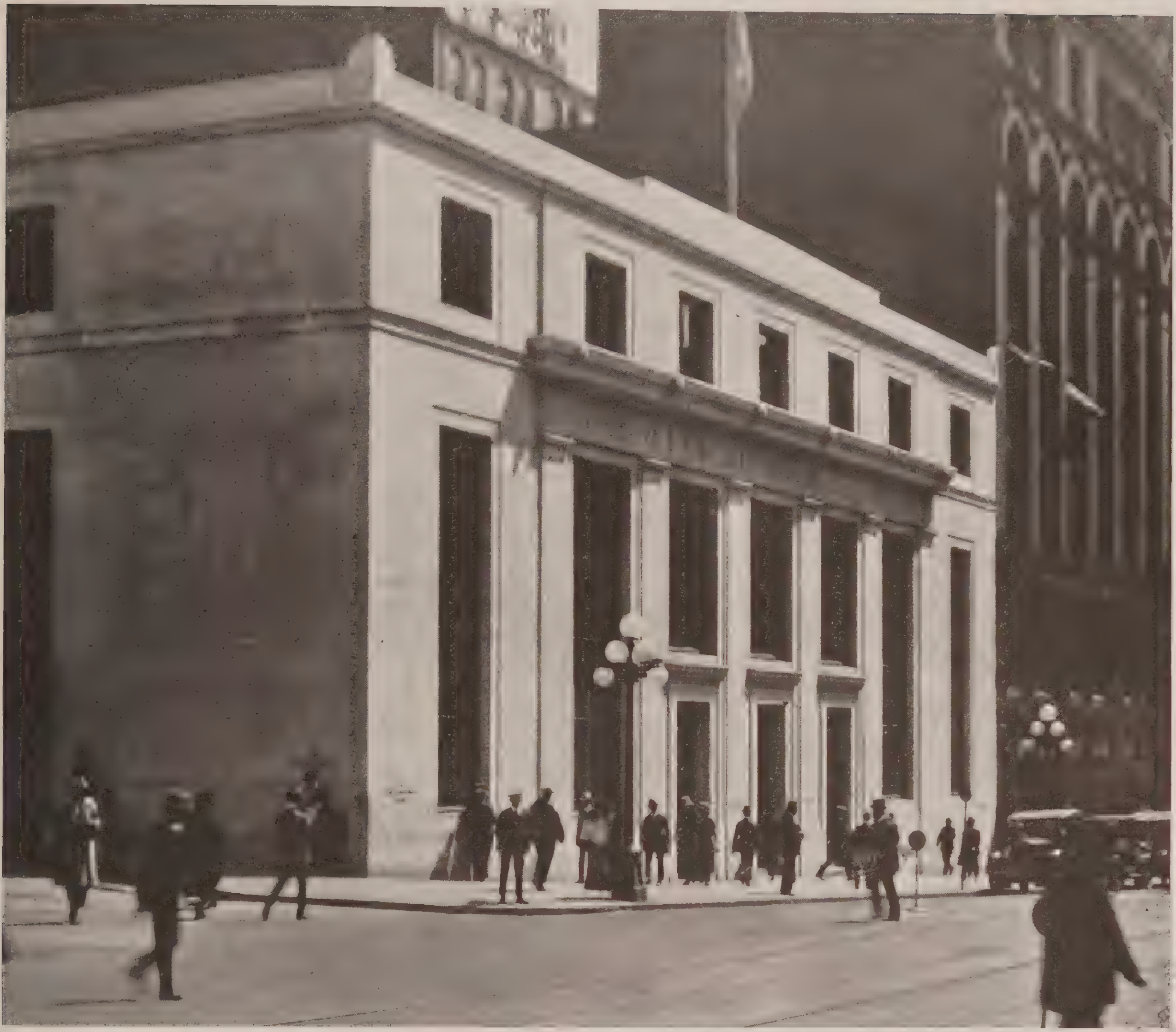
Artificial Cooling

In view of the ever-increasing use of underground working spaces, the constant demands for more comfort, and the continuous striving for better working conditions to secure not only health but with it more accurate and quicker work, there would seem to be little doubt that artificial cooling will be more and more used in the future. The refrigeration work, now being mostly done by electricity, is not a matter of very great expense, because electrical current can now be had almost anywhere at low cost. The required condensing water is practically all used again in most cases for domestic purposes. The provision of artificial cooling, however, does not mean that precautions to prevent engine and boiler room and smoke flue waste heat can be disregarded. Indeed, more care than ever should be taken to keep heat nuisances away from cooled rooms, and thus secure cooling at a minimum cost of operation and installation.

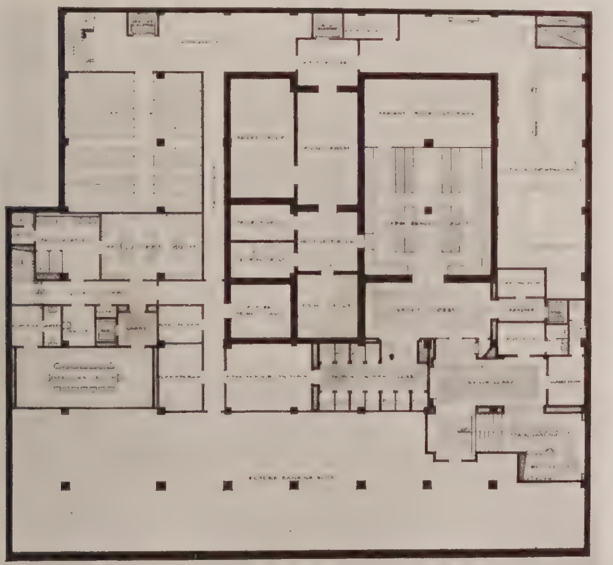
The temperature of the cooled rooms must bear some relation to the outside temperature, for a constant inside temperature of 70° when the outside is varying between 70° and 92° is neither required nor healthy. The room should be cooled to give it a feeling of freshness and coolness, and no more.

In order to show what proportions an artificial cooling plant may assume, a few words of description of the plant in the most important financial institution of our country, the New York Stock Exchange, of which Trowbridge & Livingston are architects, may be of interest. The building has 6,000,000 cubic feet. Artificial cooling has been provided for the board rooms, for stock and bond trading on the ground floor, and for stock clearing corporation quarters, vaults, coupon booths, barber shop and banking rooms in basement and sub-basement. The board rooms have 1,500,000 cubic feet of contents. The stock clearing corporation quarters, the vaults, coupon booths, barber shops and banking room in basement and sub-basement have 1,000,000 cubic feet contents.

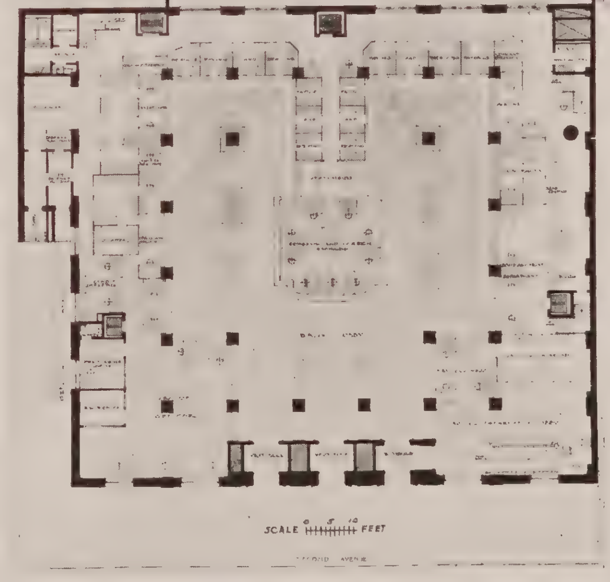
The board room population alone consists of 1,650 persons in constant movement and usually under the maximum of nervous tension. The heat emission of this number of persons in the board room is fully equal to that of the same number of hard working laborers. The board rooms have 21,000 square feet of floor area, giving 12.6 square feet per person, as compared to standard school practice of 20 square feet per person. In addition to the heat from this source, there is an unprecedented volume of 1,500,000 cubic feet of compressed air per hour, at well over 100° temperature in hot summer weather discharged into the board room from a very complicated pneumatic tube system which is installed for handling messages. As a comparison, let it be said that the average compressed air capacity for pneumatic service of the largest hotel is only about 18,000 cubic feet per hour. The necessity of an adequate supply of fresh and cooled air is self-evident. The air is cooled by four brine cooling bunkers containing 47,000 lineal feet of 1¼-inch galvanized iron pipe. Two of these bunkers are located on the fifth floor, 90 feet above the sidewalk. They are used for the board rooms, located above street level. One bunker is located 30 feet below the sidewalk, and another 62 feet below the sidewalk. These bunkers are used in connection with the basement and sub-basement spaces. The brine is circulated by four pumps, each driven by a 40-h.p. motor. The refrigerating machines themselves are located three or four floors below the sidewalk and have a capacity of 750 tons, driven by four motors of 1,600 h.p. capacity, current supplied from central station.



GENERAL EXTERIOR VIEW



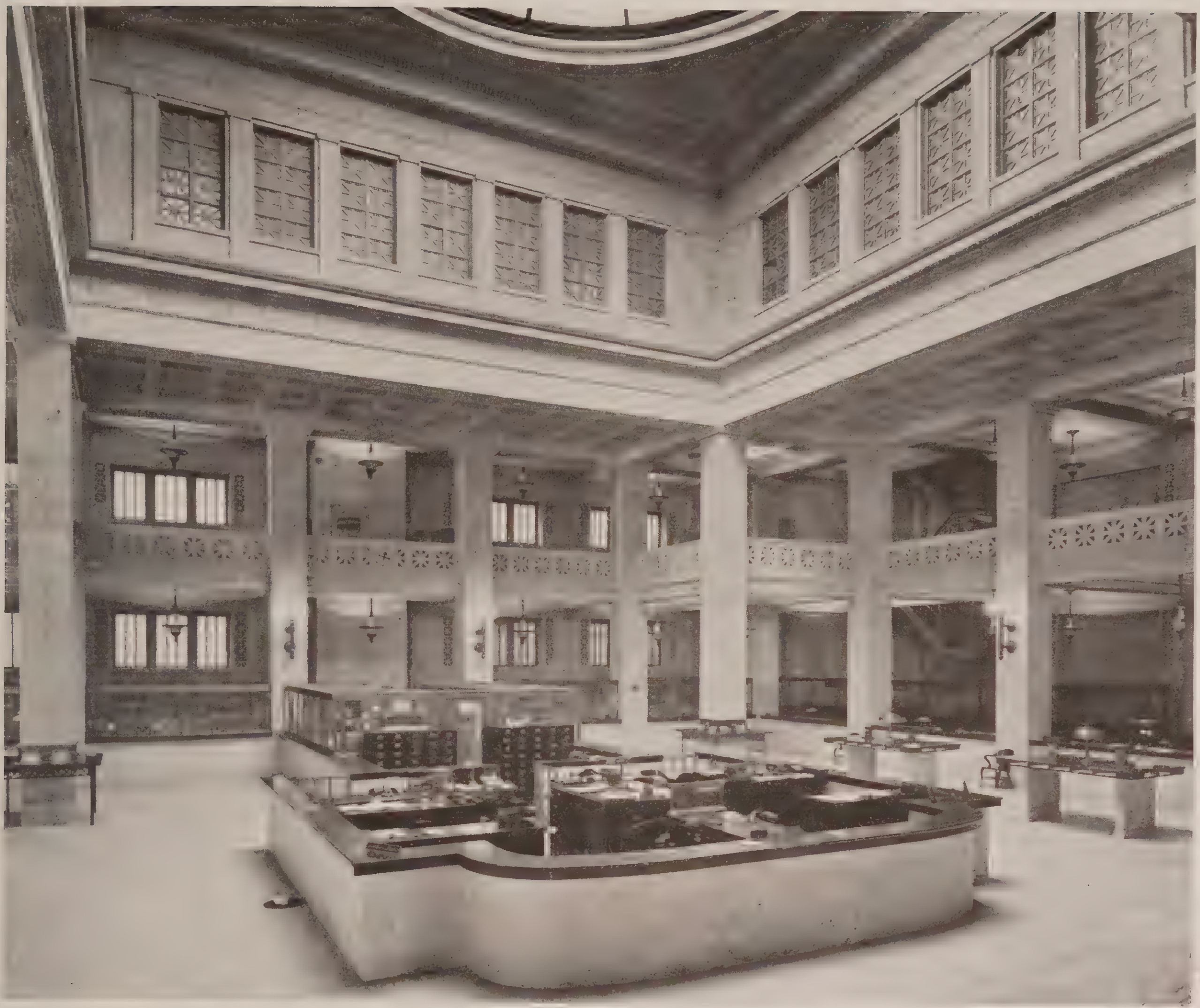
BASEMENT FLOOR PLAN



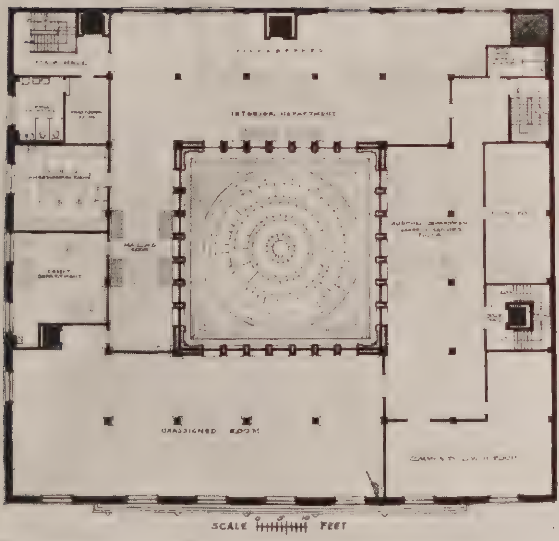
FIRST FLOOR PLAN

SEATTLE NATIONAL BANK, SEATTLE

DOYLE & MERRIAM, ARCHITECTS



GENERAL INTERIOR VIEW

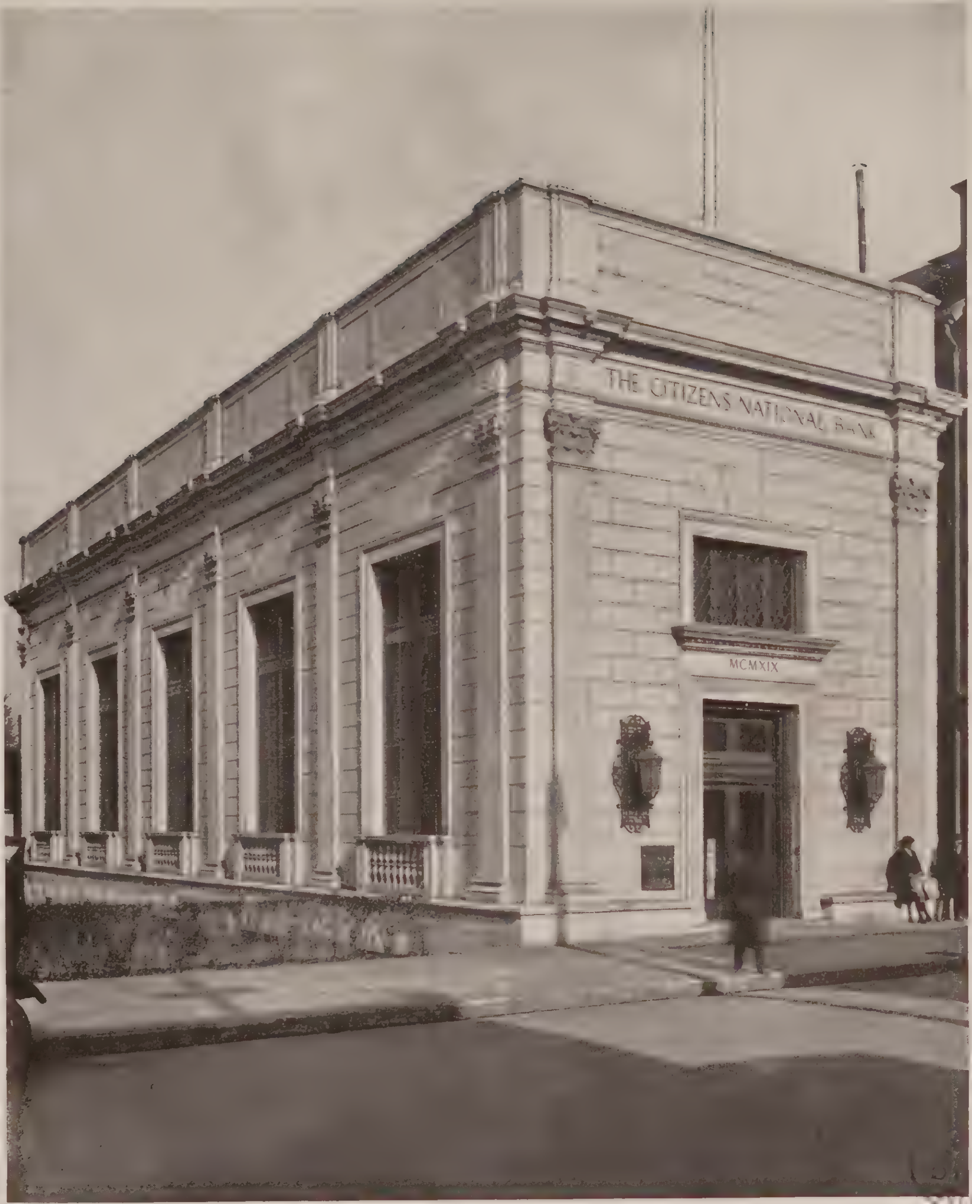


SECOND FLOOR PLAN

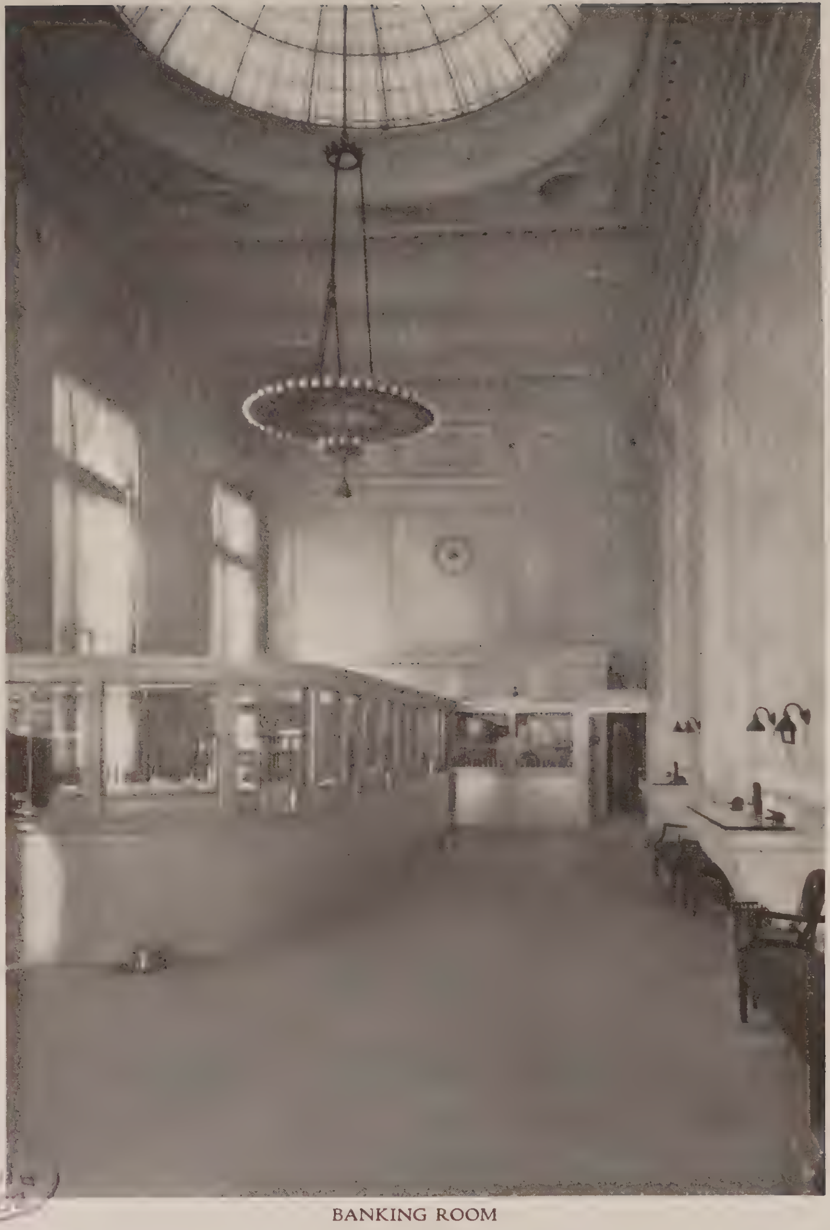
Type of construction. Reinforced concrete frame and floor system; brick filled walls
Exterior materials Marble
Interior materials. Marble floors; lower portions of walls, columns and screen travertine; upper portions artificial travertine; counter and check desk tops, black and gold marble
Windows. Steel sash
Counter screens. Travertine, marble, drawn bronze and glass
Vault and safe deposit provision. Security, book, storage and safe deposit vaults; electric protection
Special departments. Bond and safe deposit departments
Type of lighting. Indirect
Heating and ventilating. Forced blast, washed air, thermostatic control
Date of general contract. July, 1921
Total building cost. $450,000
Cubic foot cost. 60 cts.

SEATTLE NATIONAL BANK, SEATTLE

DOYLE & MERRIAM, ARCHITECTS



GENERAL EXTERIOR VIEW



BANKING ROOM

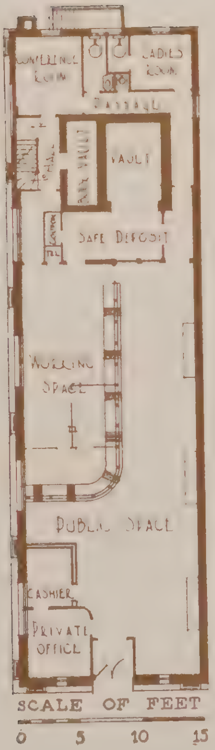
CITIZENS NATIONAL BANK, COVINGTON, VA.

ALFRED C. BOSSOM, ARCHITECT

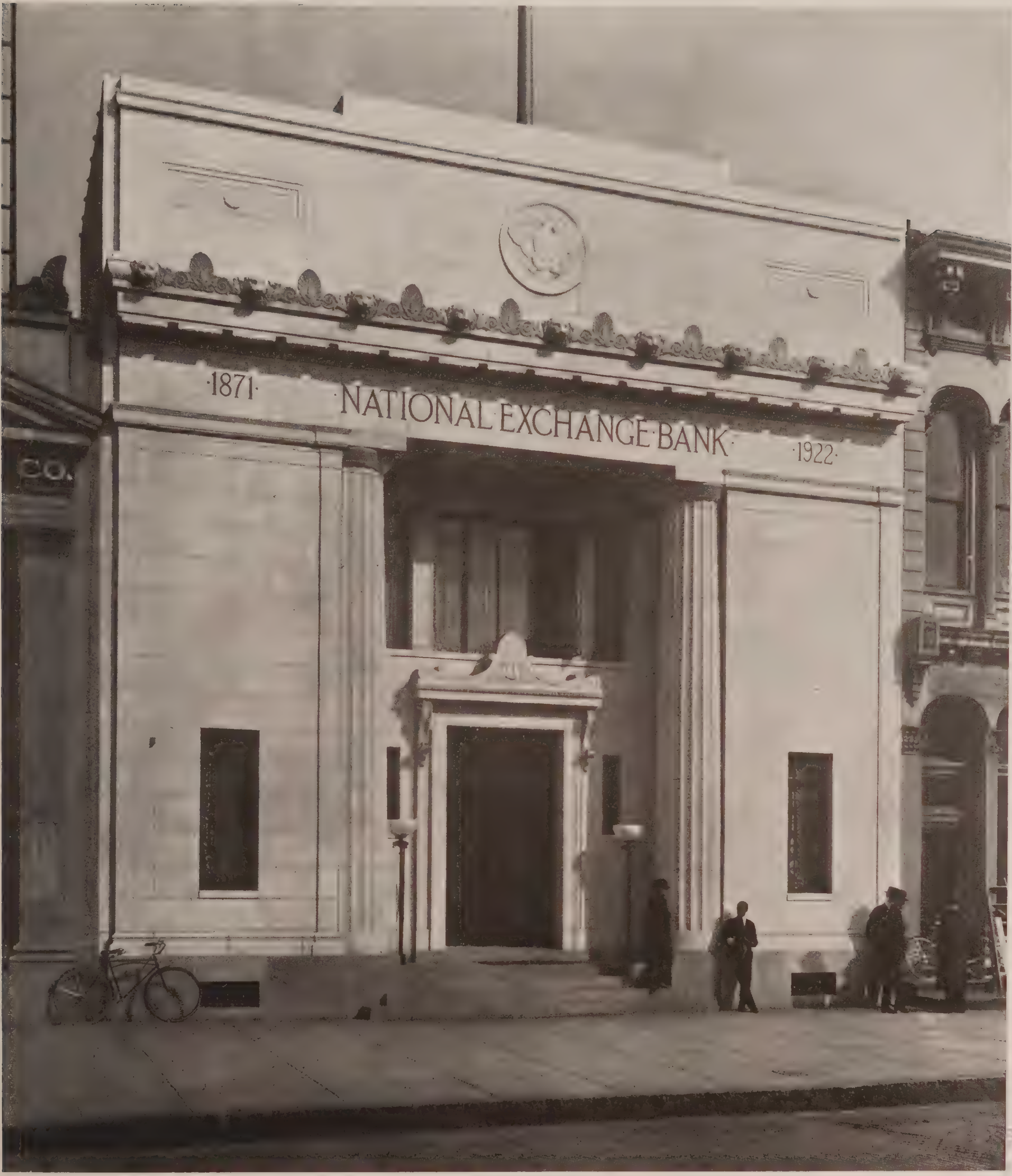
CITIZENS NATIONAL BANK
COVINGTON, VA.

Illustration on Plate 86

Type of construction. Fireproof
Exterior materials. Cast stone
Interior materials. Marble, plaster and bronze
Windows. Wood
Counter screens. Bronze and marble
Type of lighting. Direct
Heating. Low pressure steam
Total building cost. $160,000, including vault

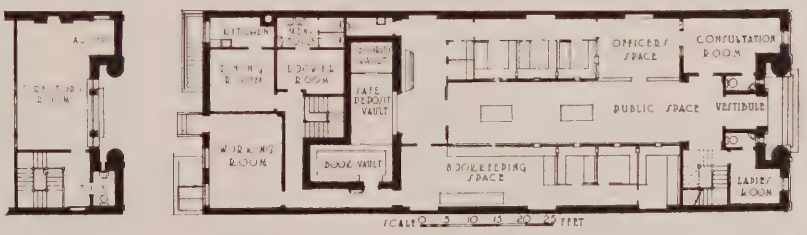


FIRST FLOOR PLAN



GENERAL VIEW OF EXTERIOR

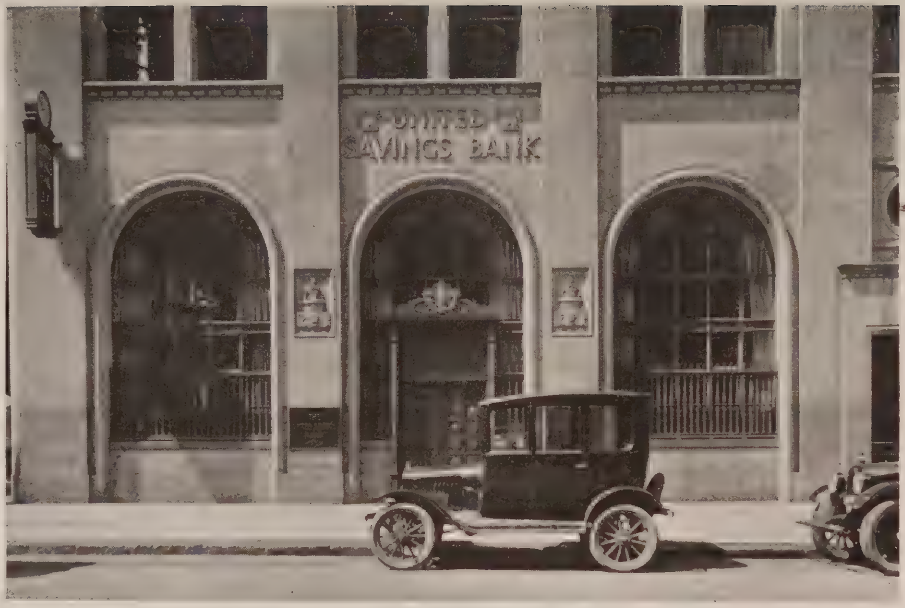
Fireproof construction; Exterior, Marble; Interior, Marble, mahogany and ornamental plaster; Windows, Steel sash and frames; Counter screens, Marble, bronze and mahogany; 450 safe deposit boxes; Book and storage vaults; Lighting, Direct and indirect; Heating, Steam; Date of general contract, February, 1921; Cost, $100,497.77; Cubic foot cost, 65 cts.



FIRST AND MEZZANINE FLOOR PLANS

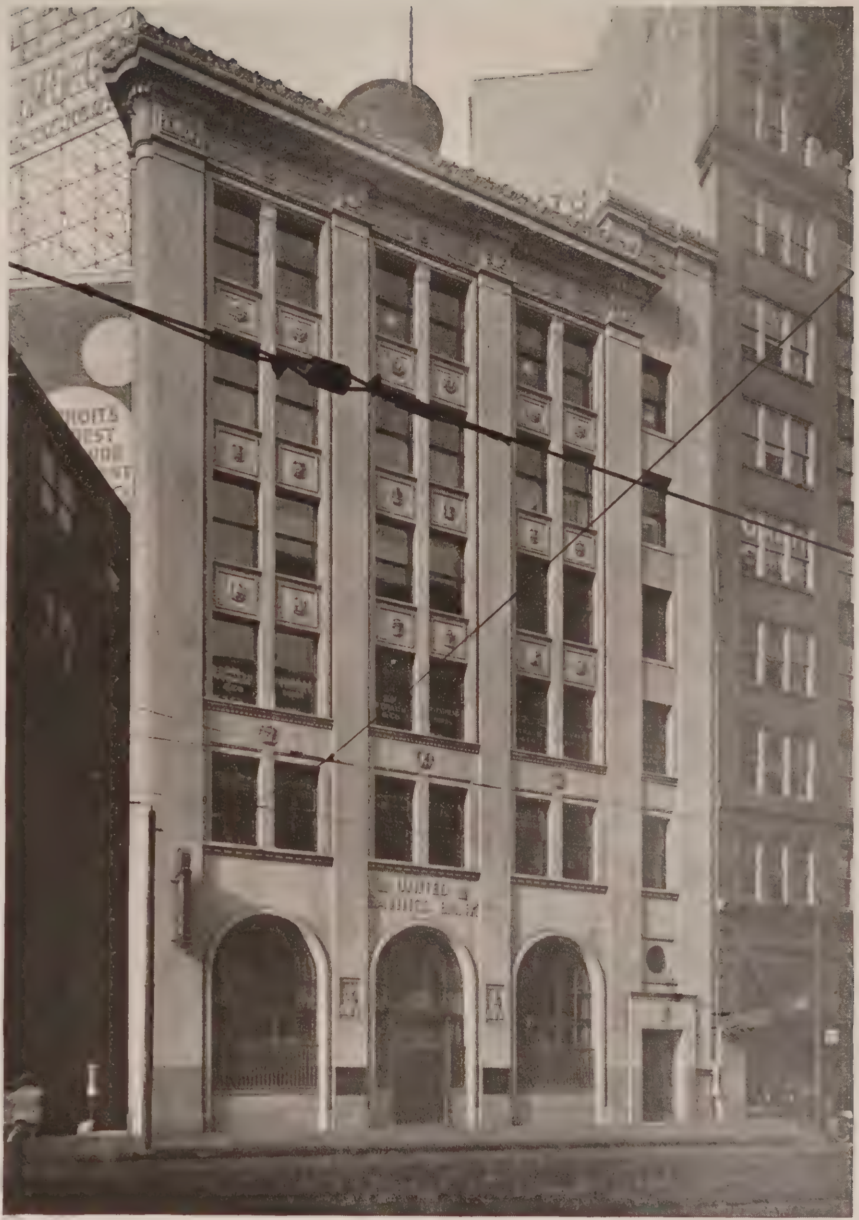
NATIONAL EXCHANGE BANK, AUGUSTA, GA.

MOWBRAY & UFFINGER, ARCHITECTS

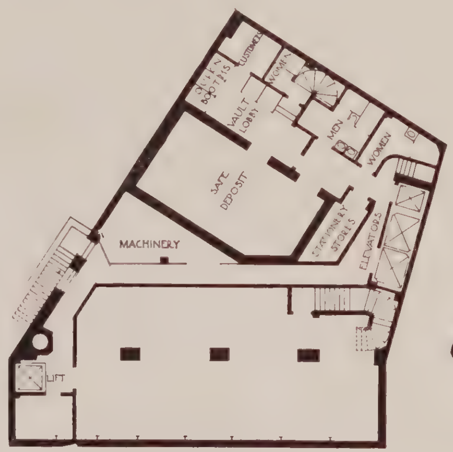


BANK ENTRANCE

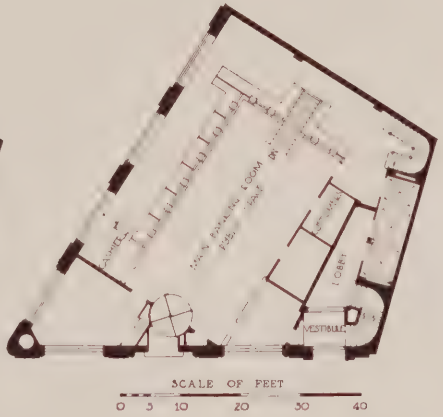
Type of construction, Fireproof; Exterior material, Limestone; Interior material, Marble; Windows, Steel sash; Counter screens, Bronze and marble; Type of lighting, Direct; Heating, Steam.



VIEW OF FRONT FACADE



BASEMENT PLAN



FIRST FLOOR PLAN

UNITED SAVINGS BANK, DETROIT

ALBERT KAHN, ARCHITECT

Vault Protection

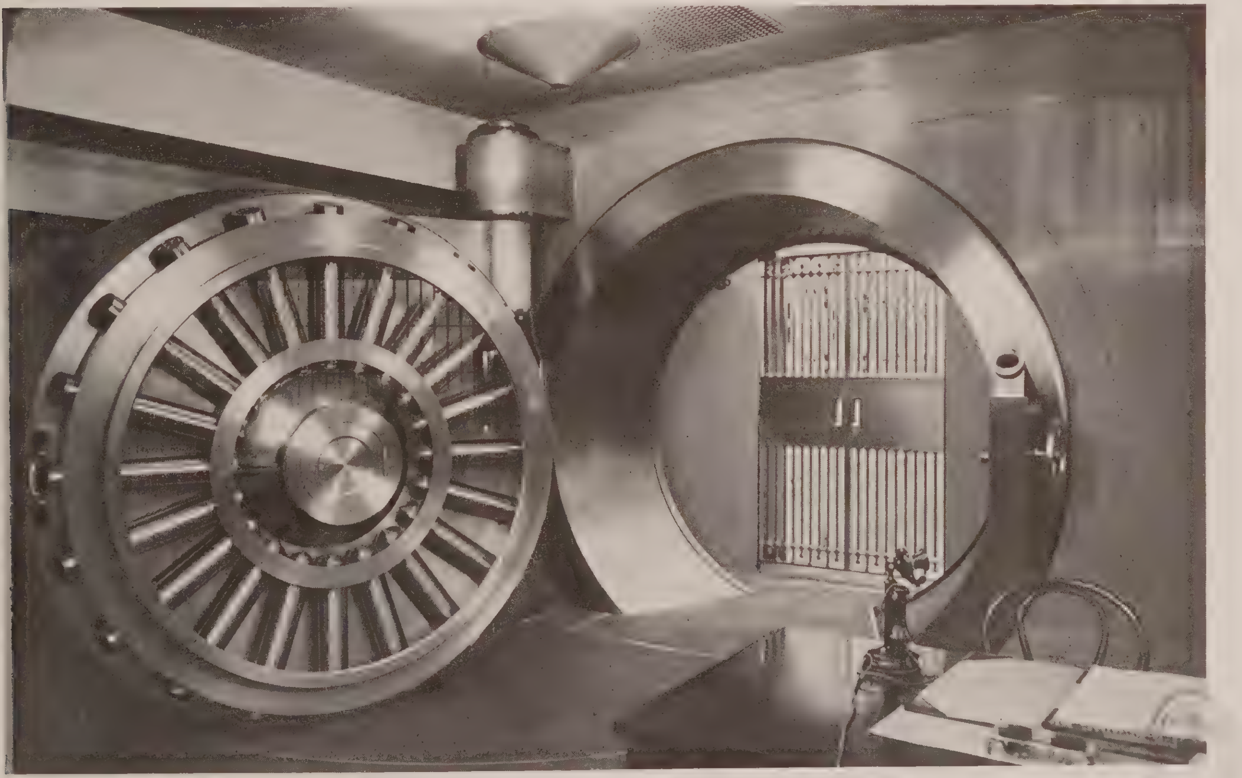
By FREDERICK S. HOLMES, *Bank Vault Engineer, New York*

FOR more than a generation the fundamental principles of vault design remained unchanged. Great progress was made by increasing thicknesses and weights, and in refining construction details, but as no new destructive forces had made their appearance during that time, and as all then known methods of attack had been successfully met, safe and vault work at the end of that period was of practically the same general character as at the beginning.

A few years ago, however, the invention, perfection and wide commercial adoption of the oxy-acetylene cutter-burner brought about a revolution in the industry; constructions which previous to that time would have resisted attack for many hours, fell in value to an equal number of minutes. This menace, however, was soon met by the invention and production of various kinds of metals and materials, singly and in combination, which sufficiently resisted the flame, and while in general the time value of the new constructions was less per dollar of cost, the designer and manufacturer felt that the problem had been solved. Matters remained in this condition, however, only for a short time, for a further discovery was made by experimenters who were endeavoring to further extend the commercial adaptability of the acetylene torch, and while this discovery has had, so far at least, little value in either the arts or sciences, it can be readily used as a burglarious device. It consists in a combination of the torch with a so-called fluxing rod, and no material nor combination of materials has thus far been found immune to its action.

The almost immediate influence of the development of this torch was reactionary and to the detriment not only of the vault manufacturing business, but even more so to the purchasers of new work, because there prevailed the mistaken belief that metals had been rendered valueless for purposes of protection, and that reinforced concrete in excessive thicknesses must take their place. The industry paused for but a brief period while research was made for an answer to a question seemingly more difficult than that raised by the initial introduction of the use of the torch. Not one, but many quite satisfactory replies have been made in the form of combinations of metals or metals and materials which do not actually stop the action of this new process, but so retard it as to make its use in burglary a negligible factor.

These remarks apply equally to large and expensive constructions for urban institutions and to the installations made in small country banks. All

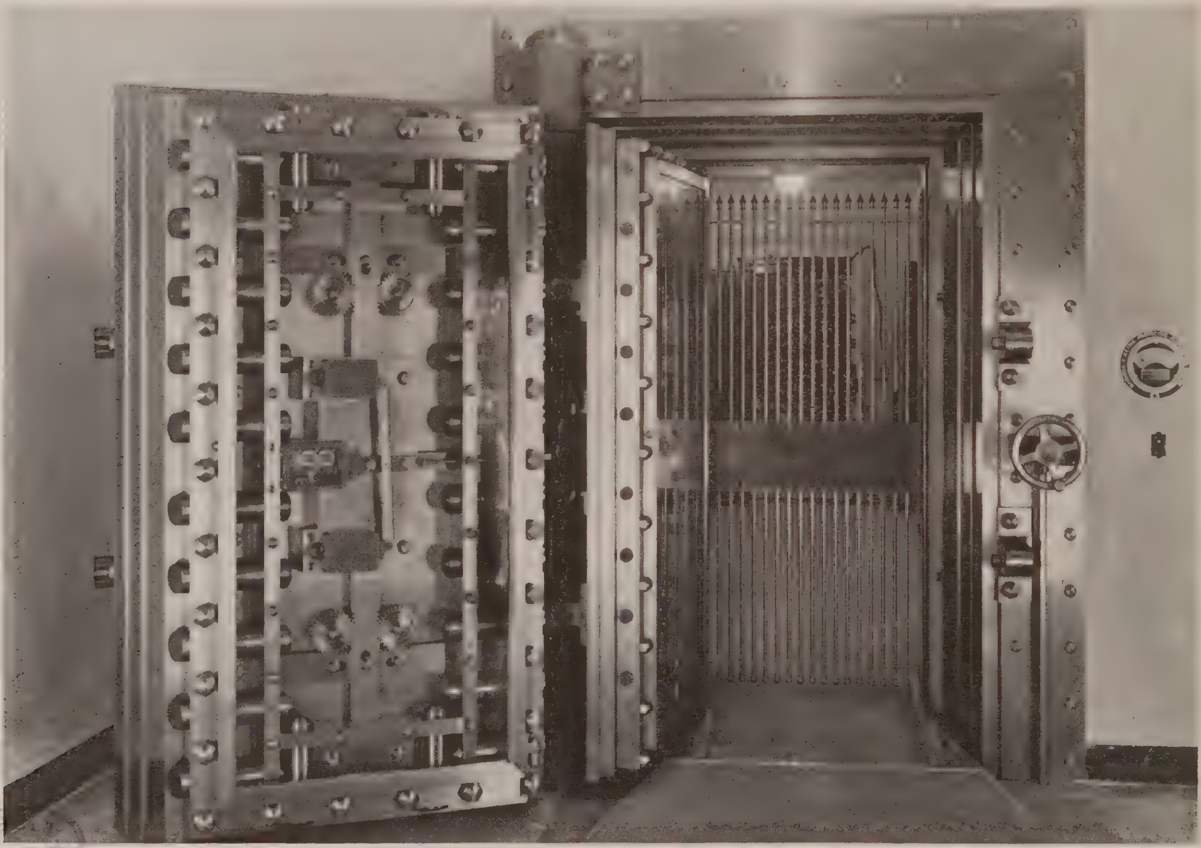


Entrance to Main Security Vault, Federal Reserve Bank, New York
Combination locks and bolt-throwing mechanism on the jamb; time lock in center of door; all bolt-operating mechanism concealed
Frederick S. Holmes, Vault Engineer

must expect to pay considerably more for any given time protection than was necessary a few years ago, and this handicap will probably be found so great in many instances that the designer cannot produce fully satisfactory results. There is, however, one grain of satisfaction, provided advantage is taken of the use of the new materials even to a limited extent, in the fact that the materials will produce vaults so much stronger than most existing structures as to provide a relatively high degree of security.

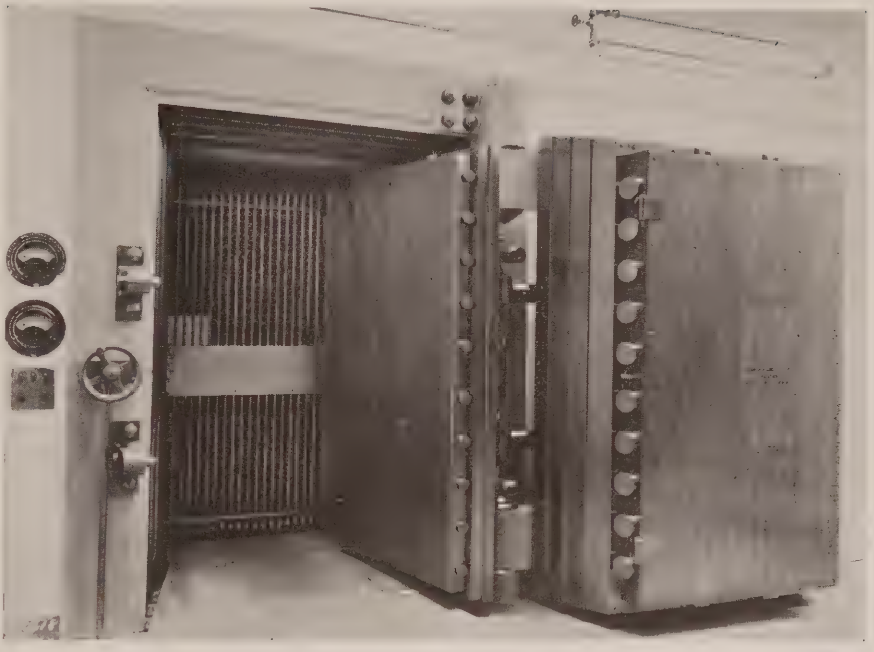
Since the torch or torch and rod combination has come into use it has been comparatively easy to cut a manhole section through a vault lining, to push the core into the vault and then to climb through the hole; the addition of anti-cutting materials very materially lengthens the time consumed in such an operation, but still leaves the method as the most practical way of entering even modern vaults. It is evident that the erection of a barrier or buttressing element upon the inside of a vault lining would prevent the pushing of the cut section into the vault. It is also evident that if the vault lining were firmly and at frequent intervals anchored to this buttressing work it could not be pulled out, but further time-consuming operations must be conducted to remove the manhole slab, either by cutting it up into small pieces or by getting openings behind it and using large quantities of explosives to break the anchorage and blow it out, and then to complete the manhole through the buttress. Recent vaults are being built in this manner, and while the inner wall is of comparatively inexpensive construction, being composed of beams, anchors and concrete work, because of its function it is probably worth more per dollar of cost than any other element of the design.

A word about the falling value of reinforced concrete for protection purposes other than as a resistant to heat and to falling bodies should be included. Architects and laymen alike are impressed with the known strength of this material for general construction purposes. This impression is strengthened as they note its resistance to drill, chisel and explosives where demolition is being carried on or changes made in seasoned material, and it has been natural enough to think of it as an ideal material for vaults. Its adoption for this purpose is country-wide, and dependence has been placed exclusively upon it in a great many instances. Previous to the appearance of the torch there was much to be said in favor of such work, particularly if the walls were thick and contained heavy section reinforcement. All such members, however, once exposed are readily cut by the burner; the difficulty heretofore has been to free them from the concrete. The use of the hand chisel and hammer, of whatever weight, is slow; pneumatic tools are not in the burglar's line, neither are explosive charges sufficiently heavy to effect requisite disruption within a brief period; but



Entrance to Safe Deposit Vault, Addition to National Shawmut Bank, Boston
Bolt-throwing mechanism exposed on inner face of door
Parker, Thomas & Rice, Architects; Benjamin F. Tripp, Vault Engineer

electrical chisels approximating the power of heavy pneumatics are on the market, and still heavier chisels are to follow. These are burglars' tools, and of course electrical current is to be had in all banks. With them concrete is rapidly cleared away and light reinforcement is cut; where the members are heavy the torch can be substituted; little skill is required in the use of such instruments, and the hammer noises can be effectually blanketed. There are indeed some designs of reinforced walls that are easily penetrated with hand hammer and chisel alone, and where neither other equipment nor skill is necessary to cut through them.



One of Seven Vaults in the Federal Reserve Bank, Boston
All mechanism for bolt-throwing concealed
R. Clipston Sturgis, Architect; Benjamin F. Tripp, Vault Engineer

Modifications of door construction have followed rather closely the changes in the wall designs, increasing thickness in the cheaper grades of work being almost universal. This is made necessary because a balanced construction requires that the door should resist simple penetration at one or two points at critical locations opposite locking devices, for the same length of time that is required to cut a manhole through the vault lining.

Hinge and pressure mechanism, bolt work, time and combination locks and connections, and other related details have undergone little change in recent years, except as they may have been made heavier and somewhat simplified in design, have received more workmanlike attention, and have acquired a better finish. In some instances the combination locks, dogging and bolt-throwing mechanism have been transferred from the door proper to the door frame; this leaves a solid door without spindle holes and makes it necessary to penetrate the door opposite the timelock, and the frame opposite the combinations, and so prolongs the time of attack.

For many years it was found practicable to open doors held locked by failure of their mechanism by the use of long instruments through a small hole in the vault's walls, even at some distance from the bolt work. This small opening could be made in much less time than would be required for the making of a manhole; the value of the work was lessened proportionally by this difference in time, so that in many vaults of modern construction the combination locks, dogging devices and bolt-throwing mechanism, and occasionally the timelock as well, are protected against this sort of manipulation by being protected by heavy steel plates so placed as to be not readily reached.

More and more, steps or rebates at the door joints are being lengthened or done away with entirely, for the perfectly good reason that each rebate provides a seat against which explosives may act to blow out the door. The complete elimination of the steps has a double value; such a joint offers no resistance in or out to explosives, and the resulting smooth surface is far more impressive and suggestive of strength than is the case when the eye must jump from one break to another. It is of course necessary to retain the so-called striker section at the inside corner of the door for the purpose of holding a waterproofing gasket, but as the door need not strike directly against this rebate, and as the gasket offers little resistance to explosive force, it in no way interferes with the inflowing gases.

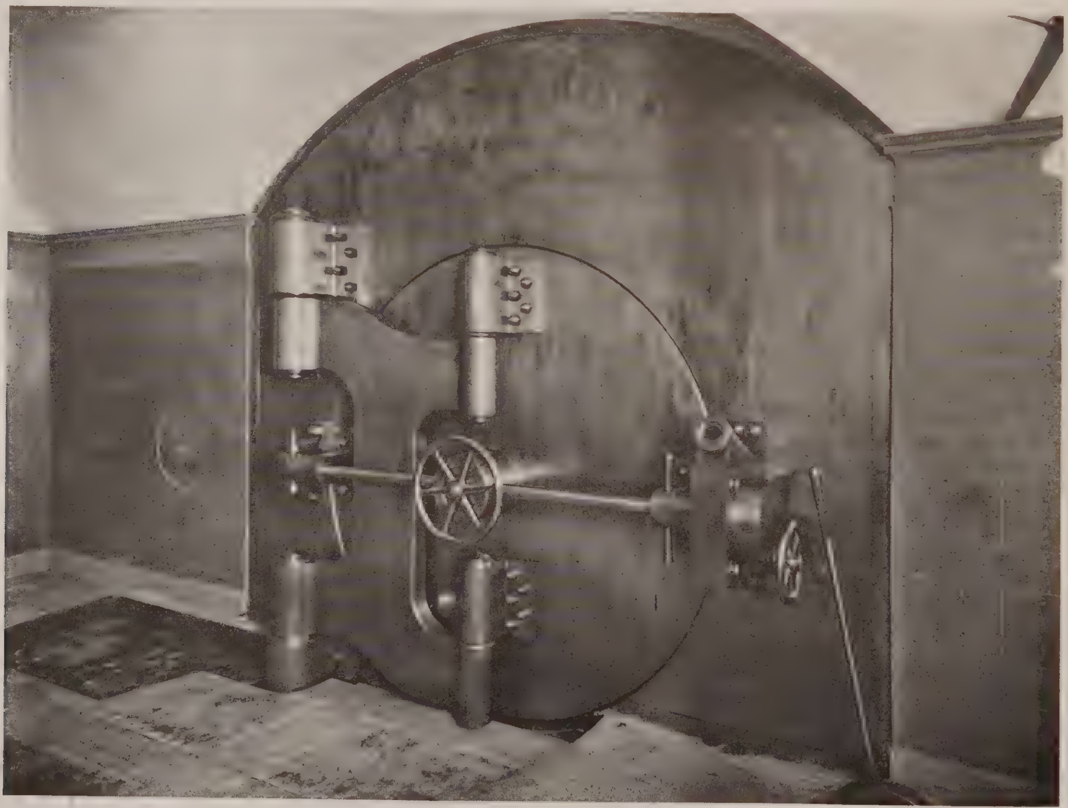
The long established custom of building vaults upon their own foundations and practically not connected with any building construction is still considered best, although departures from this principle are allowable where it seems necessary to support a vault upon the building framing if sufficient reinforcements are provided to compensate for falling loads as well as static weights, and if the framing, columns, etc., are so tied to the vault and provided with breaking joints outside the vault lines of such character as to insure, in the event of serious distortion to the frame, or building collapse, that the structural steel work included within the vault walls shall not tear out. Complete observation of all six sides of the vault structure is always to be desired. The exterior finish of a vault must depend largely upon its relation to the surrounding building construction, but many vaults, particularly those used for safe deposit purposes, or where they might otherwise become unduly striking, are so merged into the interior decoration schemes that this effect is largely lost, which is to be desired.

Electrical protection is now so well known and so almost universally adopted that it seems automatically to take its place as one of the factors of vault protection. There are many systems on the market, some much better than others, but all of value, partly as real protection in the event of attack and partly as a prevention of attack. Occasionally two systems are used on the same vault, in which case each supervises the other. Intrinsically weak structures depend more upon electrical protection because of their lack of inherent strength; but the electrical equipment should also be used upon the heaviest and strongest of vaults or at least upon their doors, as its presence acts to prevent the unauthorized opening of the vault by inside parties.

The subject of vault ventilation, which in years gone by was almost entirely neglected, is now receiving the attention that it deserves. The problem is quite different from that of ventilating a room, although until recently it has been treated in much the same way. A vault has no fenestration, and frequently but one door, and all of the heat units generated by the lighting system as well as those given off by people in the vault must be taken out by forced draft. This is best effected, where an emergency entrance is provided, by opening this door into a pressure or plenum chamber and distributing the air inside the vault by suitable ducts over or beneath the interior equipment, liberating it at the dead ends of transepts or other similar locations and allowing it to find its way out through the main entrance and picking it up just outside the vault by a ceiling exhaust register.

If the vault is large and the building pressure low, it may be best to put the vault on a separate system with a high pressure fan on the outside, or to use a booster just inside the vault. If the vault is double and has two entrances, one to a security division and a second to a safe deposit department, a satisfactory ventilating scheme is frequently obtained by using a push and pull fan between the two compartments, drawing the air in through one door to the ends of transepts or other similar places, and delivering it under pressure from similar locations in the opposite side of the vault. If there is but one entrance to the vault and the interior is of any considerable size, a sectional duct may be secured to the underside of the foot plate bridging the doorway, where automatic connection may be made both inside and outside, and air forced in and liberated at the ends of aisles to be exhausted through the doorway. If the vault is exceptionally large, a combination system of supply and exhaust may be installed through an emergency or ventilating entrance, the location of the delivery and exhaust registers being determined by the interior equipment.

To sum up, 50 years ago the whole matter was not much more than a job for a blacksmith; today it is a highly specialized and diversified engineering proposition, and should be so considered and treated.



Entrance to Safe Deposit Vault, National Commercial Bank & Trust Co., Albany
Surface of door and frame of polished steel; lowering platform in front
York & Sawyer, Architects; Frederick S. Holmes, Vault Engineer

The Reduction of Noise in Banks and Offices

By CLIFFORD M. SWAN, S.B., A.M.
Consulting Engineer, New York

TWO officials of a well known institution in New York were recently walking in earnest converse through the corridors of their new building. They were surrounded by the usual babel of echoing sound common to such public spaces, and were, moreover, unpleasantly conscious of their own voices reflected back upon them, making both speaking and hearing difficult and uncomfortable. They stepped through a door into a department on a large open floor, when suddenly it seemed as if a blanket had been thrown over their heads shutting off all sound. They stopped in sheer amazement until it dawned upon them that the ceiling of this department had been covered with material intended to absorb the sound and produce just the condition of quiet noted. The contrast in conditions was impressive, much like that experienced when a train emerges from the subway onto an open viaduct. Conversation could be carried on without strain, and the usual sounds of the office were minimized to an unbelievable degree. The two officials received a practical demonstration of the work which they had previously approved on theoretical grounds such as no verbal description had ever conveyed to them.

The quieting of offices and workrooms is a comparatively recent development of technical science. Following logically as a result of the acoustical researches of the late Prof. Wallace C. Sabine of Harvard University, it has been welcomed alike by office managers, efficiency experts, welfare workers and physicians as a necessary factor in the conservation of human energy, quite as important as problems of heating, lighting and ventilation. The amount of noise developed in a bank, office building, hospital, or restaurant of fireproof construction is far greater than is perhaps commonly appreciated. The modern city dweller becomes so accustomed to life in the midst of a continual racket that often he does not realize how aggravated is the condition, nor what a drain on the nervous system is involved.

The interior finish of a first class, fireproof building consists chiefly of materials such as concrete, hard plaster, marble, stone, terrazzo and glazed tile. Wood, even for trim and furniture, is largely barred, and in its place metal is now used. When a sound wave strikes such surfaces, only a small fraction of the energy is absorbed, and the major portion of the sound is reflected. Hence, when any sound is produced, it is reflected back and forth from surface to surface many hundred times before it is so far absorbed that it cannot be heard. Such a process consumes several seconds of time, and naturally all other sounds produced in that period add their energy to the first and to one another, so that the result is a piling up of sound, making it many times louder than would be the case if the reverberatory condition did not exist. Thus the usual office noises, such as proceed from typewriters, adding machines, telephone bells and conversation, and from street noises entering from outside, are all magnified into a great din.

The mind apparently becomes accustomed to all this noise by eliminating it from the waking consciousness, just as a man can become so absorbed in thought as not to be aware of a person's speaking to him. Psychologists tell us that the sound registers on the subconscious mind, however, and produces its effect just as surely as if we were aware that we had heard it. There is no escape from the action of the noise on the brain and nervous system. The result inevitably is fatigue, lessened powers of concentrated and accurate thinking, and a general lowering of efficiency. This is harmful alike to the health of the workers and the good of the business.

Anything which will absorb sound will, if introduced into a room such as described, tend to improve conditions by diminishing the amount of reverberation and so the volume of noise. The clothing of employes acts in this direction, but is not enough to correct it. Heavy hangings, rugs, carpets and upholstered furniture do the same, but of course are not usually practicable excepting in private offices. The remedy must, therefore, lie in the application of absorbent materials to walls or ceilings, usually the latter. Such materials fall in two classes,—structural materials such as acoustical tile or plaster, and corrective materials like hair felt which must be covered with a concealing fabric of one type or another. Both classes have their advantages and their limitations.

Architecturally, the most interesting of these substances are the tile, brick or block manufactured in such a way as to have a structure of intercommunicating interstices of suitable sizes which permit the sound to penetrate and be absorbed. The principle was worked out by the joint researches of the late Prof. Sabine* and Mr. Guastavino. Several types of tile and artificial stone are now on the market and are being used with excellent results, being excellent sound-absorbers. Since in office quieting work they must usually be placed upon the ceiling, they naturally lend themselves from an architectural standpoint rather to vaulted forms of design than to flat ceilings, but they can, if desired, be perfectly well used on the latter. Use is often made of acoustical plaster, which was the next result of the research following the two materials just described. Such plaster has thus far been used only to a limited extent in practice. It is considerably more expensive than ordinary plaster, and its use requires

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*"Collected Papers on Acoustics," Wallace C. Sabine, Harvard University Press, pp. 207-209; also *The Brickbuilder*, January, 1914.

exceedingly careful supervision and faithful carrying out of instructions in order to insure its proper application in a way to produce efficient results.

Other materials have frequently appeared on the market with fantastic and misleading claims to acoustical value. It is well to note that the only genuine basis on which such a claim can legitimately rest is the sound-absorbing quality, and that this depends not only on the degree of porosity, but also upon the fact that the pores must communicate with each other and be of approximately uniform size. In other words, it must have a structure much like a sponge of very fine texture.

Probably the most popular material for office quieting is hair felt.* If such a felt is made of perfectly clean, pure cattle hair, well matted, it is odorless, permanent and efficient. Nor is it inflammable as are vegetable fibers. In thickness, it should be normally 1 inch. There is no advantage to be gained by using a greater thickness, as this would increase the absorption only for the lower pitches which are seldom a factor in acoustical problems. For the sake of appearance, the felt must be concealed from view by a covering of some sort of fabric which will not reflect sound striking it, and which will harmonize with the architectural features, the decoration and the furnishings of the room. For instance, in a lofty banking room, with ornamental plaster ceiling and stone walls, a beautiful effect can be obtained by hanging pads of felt against the walls with tapestries over them.

In the average bank or business office, however, the spaces which are most in need of quieting treatment are those devoted to typewriters, addressographs, adding machines, telegraph instruments, and other noise-producing devices, or those in which a great degree of quiet is essential, such as telephone switchboard and conference rooms. These are usually situated on floors with height not greatly over 12 feet and little wall space, so that the ceiling is clearly indicated as the necessary location for the quieting treatment. The felt can readily be applied to the ceiling, but a difficulty arises in deciding upon an efficient covering. If muslin or canvas is stretched over the felt and then painted to simulate a plaster surface, the membrane loses its porosity and becomes stiff and reflects a large proportion of the short wave lengths or high pitched sounds which are characteristic of office noises. The heavier the cloth and the paint the greater is the reduction in efficiency. This effect is not as marked for the sound of the voice, but the click of a typewriter or adding machine is reflected with almost undiminished intensity. On the other hand, if the muslin is not painted, but dyed to the desired color, then the porosity and absorption are left unimpaired, but the surface soils rapidly on account of the constant circulation of dust-laden air through it, and soon becomes unsightly.

Recently a membrane has appeared which solves the difficulty. The painted cloth was satisfactory for all but high pitched sounds; by the simple device of perforating the cloth with holes suitably sized and spaced, the penetrability of the membrane for these sounds is restored and the absorbing power of the treatment is as great as with uncovered felt. Such a membrane can be painted with any kind of paint without impairing its efficiency as long as the holes are not filmed over. Such a ceiling, of course, shows a pattern composed of rows of small polka dots, but the effect is not unpleasing, and the light reflection is not greatly diminished. It is, at the present time, the most satisfactory solution of the problem as far as treating noisy offices is concerned, and has been adopted for extensive use in the new buildings of the Federal Reserve Bank, New York, of the Union Trust Co., Cleveland, and other large institutions.

A word should be said regarding the layout of offices with regard to the acoustical problem. In general, a large open floor is preferable as a working space rather than a number of small offices separated by partitions. Not only are the ventilation and the accessibility of such an arrangement better, but the space is much more readily quieted by the ceiling treatment than in a small office where the ceiling forms a smaller proportion of the total interior surface. Noise-producing instruments should, as far as possible, be segregated and isolated in departments by themselves in order to reduce the expense of installing quieting treatment. There is no objection, however, to scattered machines on an open floor, provided the ceiling has received treatment as a whole, but this, of course, is not as economical an arrangement. Single machines, in small offices, should be of the so-called noiseless variety.

Individual offices and conference rooms may either be divided off by solid tile and plaster partitions or by wood and glass extending upward all or part of the distance to the ceiling. Such rooms with walls of the full height are treated as individual units; those whose partitions do not reach the ceiling must be considered in their relation to contiguous offices or floor spaces. If the distance between the tops of the partitions and the ceiling is much greater than 1 foot, there can be little isolation, as sounds will carry in a direct air path over the tops of the partitions, regardless of the nature of the ceiling. With only a small gap near the ceiling, however, and with absorptive treatment on the ceiling, little sound will pass over, and a considerable degree of privacy will be established. Such an arrangement is often desirable on account of the superiority of ventilation over the fully enclosed office.

It is manifestly impossible in a short article to do more than outline the general problems of bank and office noise and the ways in which they are met. Similar problems exist in hospitals, restaurants, indoor gymnasiums, swimming pools, shooting ranges, bowling alleys, and the like. Often there are complications, such as sound transmitted through walls or floors. Like all technical problems, the various cases which arise must be the subject of expert study in order to arrive at their adequate solutions.

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* "Collected Papers on Acoustics," pp. 157-161.

The Fifty-Sixth Convention of the A.I.A.

MAY 16, 17 AND 18, 1923, WASHINGTON

THE convention at Washington gave evidence of the progressive spirit and growing influence of architects. The Institute may well feel proud of the success which has attended its efforts to secure a wider representation of American architects in its membership. The new members secured in 1922 totaled 271, making a membership of 2,714 at the opening of the convention. The quota of delegates to membership was reduced last year 50 per cent, so that the conventions would not become unwieldy, and with this reduction there was an attendance of delegates and members totaling 244. By action of this convention this reduced representation has been made permanent.

The work of linking the members of the Institute together has been furthered by holding meetings of the board during the past year in different sections of the country, and with the directors elected this year the recently inaugurated plan of regional distribution of directors has been completed. This will tend to encourage the holding of smaller regional conventions where local problems can be discussed fully and their nature brought to the Institute at large through the attendance of the board. Such a regional meeting was recently held at Charleston, in which delegates from four of the southern chapters participated.

It will perhaps surprise no one to hear that the subject of competitions was of major importance in the convention, because it is always discussed where architects gather. A step has now been taken, however, which may eventually settle this moot topic. The conflicting and varied state and municipal regulations governing competitions have become apparent, and it is realized that the Institute cannot effectively lay down principles for the guidance of its members that will be fair to them in consideration of the many architects who are not obligated to follow Institute procedure, when legal procedure regarding competitions is so far from being standard. The note of progress in this convention was therefore the beginning of an attempt to frame a law governing competitions that it is hoped will be adopted by the various state and municipal governments. This naturally entails a large amount of study, and it presents an opportunity of giving serious consideration to the various proposals that have been made by several chapters from time to time in the past. The Institute has been successful in the legislative work it has undertaken with regard to architects' registration, and success in standardizing competition procedure will go a long way in removing the difficulties which many architects honestly enough find in the way of their becoming Institute members.

In compliance with the trend of the hour the Institute is giving attention to industrial relations. Architects generally have come to realize that their traditional policy of aloofness in the differences between employers and employes is not constructive, and that because of their neutral, professional position they are in a position to lend help and advice to a situation that calls for clear thinking and honest, man-to-man dealing. Results of architects' active interest in industrial relations are already evidenced by active movements to recruit apprentices to the building trades on a permanent basis in New York, Philadelphia, Boston and some of the cities of the Pacific coast. This work is being carried out by local groups, chiefly organized under the principles of the Building Congress, in which representatives of all the elements of the building industry, including labor, come together on an equal footing. These groups are serving to dispel the distrust and suspicion that have too long retarded the industry, and their success should stimulate architects in other cities to meet their local problems in a similar manner.

In this same field is the National Board of Jurisdictional Awards, for which the Institute was largely responsible. There has persisted a feeling in parts of the country where open shop conditions prevail that the Institute exceeded its authority in requiring architects in writing specifications to be governed by the board's decisions with regard to the subdivisions of contracts. Repeated interpretations that the decisions were effective only in territories where building operations are carried on under agreements between organized employers and labor unions were not sufficient, and now, largely at the insistence of southern California, a statement to this effect has been definitely adopted as governing members of the Institute. Ernest J. Russell, who has so well served the Institute as its representative on the board and also as the president of the jurisdictional board, tendered his resignation at the convention. Mr. Russell was accorded hearty thanks for his long and untiring efforts, and it is sincerely hoped that a man of similar tact and good judgment will be found to carry on the work he has so ably established.

The work of the Structural Service Committee, which has been expanding rapidly during the few years of its existence, has demonstrated the need for such service as it renders architects. A year ago the Producers' Section was inaugurated, by which such manufacturers of building materials as desired might co-operate with the committee and receive its advice with regard to their advertising and other sales efforts directed to the architect.

The Committee on the Preservation of Historic Monuments reported the successful restoration of a small portion of the Fine Arts Building of the Columbian Exposition in Chicago. During the convention news was received that the South Park Commissioners, of Chicago, had decided in favor of restoring the entire building, and thus the efforts of the Chicago chapter, in which George Maher has taken so long an active part, have been rewarded. It is hoped that the restoration will be worthy of the efforts of those who have saved the building.

Preliminary steps were taken at this convention looking to the restoration of the "Octagon," the Institute's headquarters, and for the development of the property to provide an assembly hall and exhibition gallery large enough for Institute and similar society purposes in Washington. Plans are being carefully developed, and the opportunity for criticism and suggestions will be open to every Institute member before they are accepted. Final action on the scheme is deferred till the 1924 convention.

During the discussion of the "Octagon" problem announcement was made of the gift to the Institute of $5,000 by the Associated Architects of Los Angeles for the restoration and furnishing of the drawing room. This will make possible the restoration of the room to be made adequately and to reflect again the dignity it possessed when the house was temporarily the official residence of President Madison. The Associated Architects of Los Angeles, it is interesting to note, is a group of Institute members who have formed a working agreement to design the public buildings of Los Angeles and thus give to the city the benefit of the best architectural advice. Profits resulting from their commissions are applied to educational or other works to advance the cause of architecture.

The officers of the Institute elected for 1924 are:
President, William B. Faville, San Francisco.
First Vice-president, N. Max Dunning, Chicago.
Second Vice-president, William Stanley Parker, Boston.
Secretary, Edwin H. Brown, Minneapolis.
Treasurer, D. Everett Waid, New York.

Directors for the third, fifth and eighth regional districts, respectively, are:
Clarence C. Zantzinger, Philadelphia.
C. Herrick Hammond, Chicago.
William E. Fisher, Denver.

The closing event of the convention was the banquet and pageant at the Lincoln Memorial in connection with the presentation of the gold medal to Henry Bacon, F.A.I.A. Never in the history of the Institute, and perhaps never in the entire history of American art, was there a more impressive or inspiring occasion. The Lincoln Memorial has within the few short years of its existence become a shrine of American patriotism, and it was highly fitting that on its broad steps and terraces the tribute of his fellow architects and the tribute of the American people, represented by the president of the nation, should be given the author of its design. It is without any reservation the noblest monument of modern times, and it was a truly noble outpouring of affection and praise that the gathering of 500 architects, sculptors, painters and other representatives of the arts paid Mr. Bacon.

The banquet was held in a large, galy lighted tent spread at the eastern end of the lagoon in front of the memorial. Special robes of blue, orange, green, light and dark red were supplied to the guests, those at each table being of the same color. Gorgeous banners representing the various Institute chapters, architectural schools and clubs were grouped at the ends of the tables. During the dinner the changing lights of closing dusk brought out the majesty and beauty of the memorial in the distance. At the close of the banquet an exceedingly gracious tribute was paid Mr. Bacon in the address by Royal Cortissoz.

Upon a signal that President Harding had reached the memorial the progress of the pageant was begun. The president of the Institute with the distinguished guests, Mr. Bacon, and his collaborators on the memorial, Daniel Chester French and Jules Guerin, boarded the barge of honor moored before the banquet tent. This simulated a Roman galley, with a huge red sail displaying the Institute seal, and on its deck a pedestal held burning green fire. To the slow cadence of ceremonial music by the Marine Band on the deck, the barge was drawn the length of the great lagoon, and there followed on either bank the robed guests with a brilliant banner marking every 20 feet or so. As the memorial was approached and those at the heads of the columns began mounting the steps leading to the memorial, the splendor and beauty of ancient Greece seemed to live again. Lights playing across the front of the memorial caught the brilliant robes and banners; the foreground was an intense black, and the huge seated figure of Lincoln stood out dark against a purple light which illumined the recesses of the great structure. The immense scale of the memorial was made evident when the figures of President Harding and Chief Justice Taft appeared between two of the columns as they started down the steps to meet the approaching barge. The majesty of the setting and the beauty of the brilliant, radiant colors against the deep shadows of the evening can best be conveyed by liking them to Walcott's water colors of ancient Roman festivals. The president and Chief Justice Taft occupied a box on the third tier of steps, and behind them and at either side were massed the banners. The guests were arranged in two large groups on the terrace immediately below. The president of the Institute introduced Chief Justice Taft who in turn introduced President Harding. The president expressed the gratitude of the people for the efforts of Mr. Bacon and his collaborators in producing the memorial, and after gracious compliments to Mr. Bacon presented him with the gold medal. Mr. Bacon responded in a brief and simple manner, and thus was brought to a close an event that was inspiring to all who witnessed it. As a signal honor to Mr. Bacon it will be warmly cherished by him, but it marks no less a distinction to the entire profession, and architects may justly feel the thrill of accomplishment and the utmost in public recognition which the presence of the chief executive of the nation bestowed upon their work.

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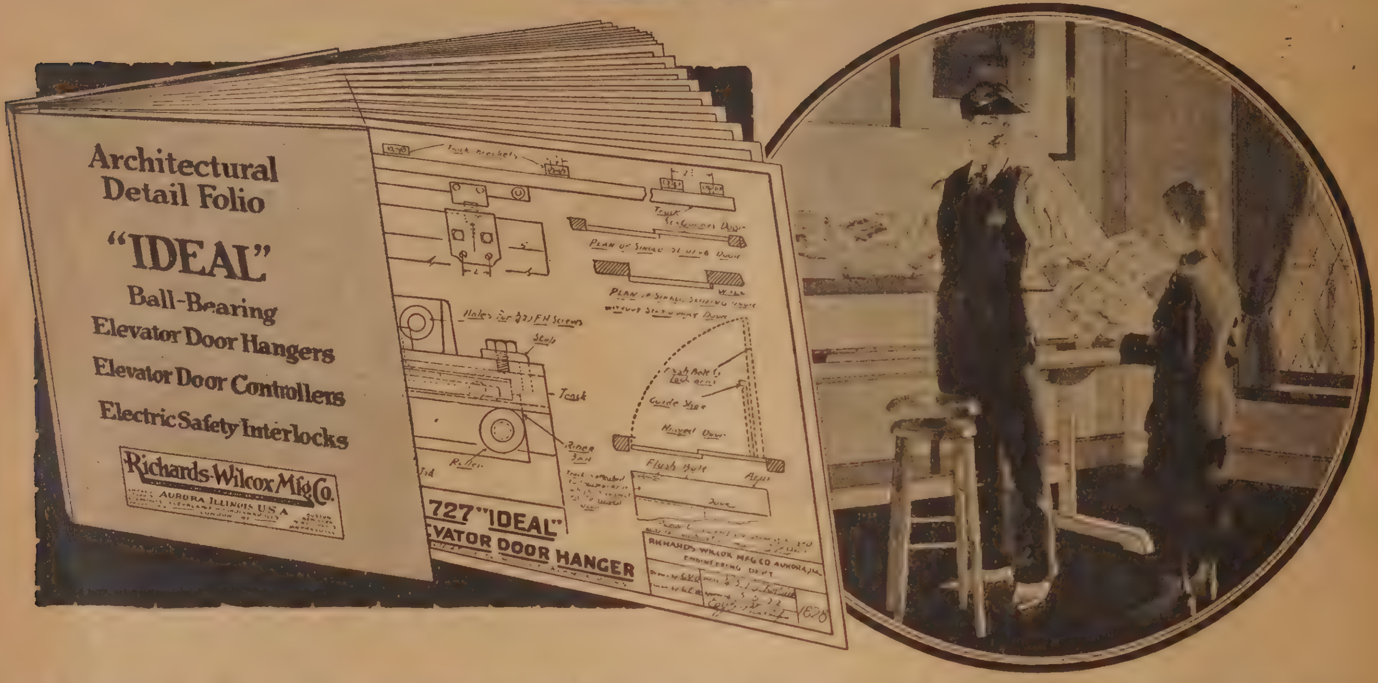

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